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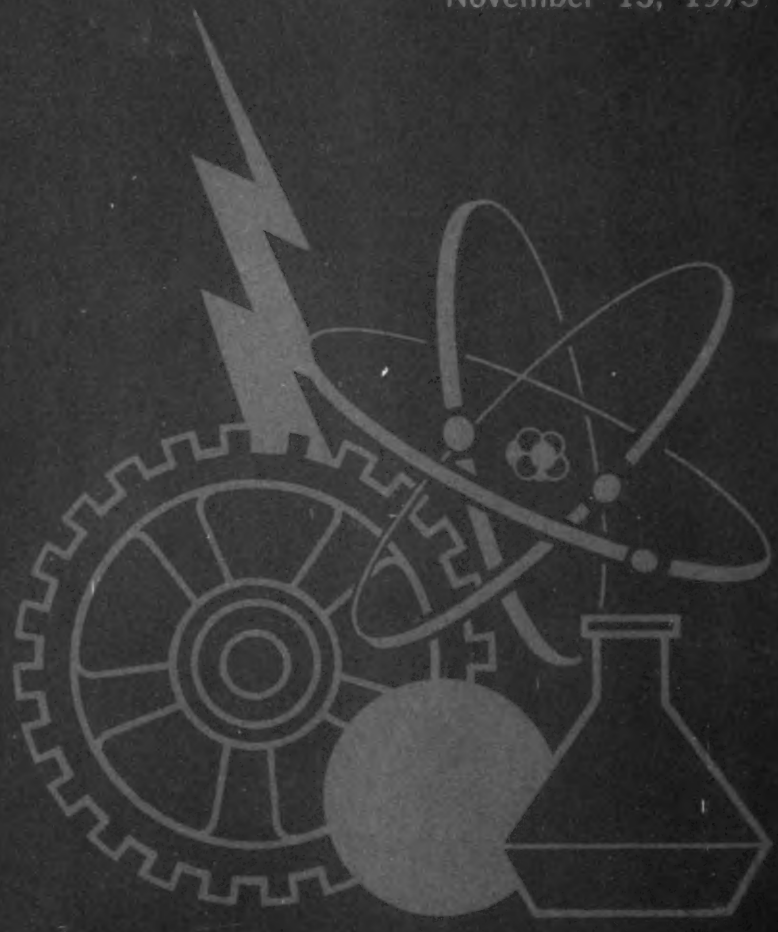
PATENTS

November 13, 1973



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November 13, 1973 Volume 916 Number 2

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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before December 3, 1973.

Finch, Glenn O., 3427 N. Washington Blvd., Arlington, Va. 22201

McClenahan, W. John, Alex. E. MacRae & Co., 100 Sparks St., Ottawa, Ontario, Canada

Wickham, Vivian H., Gowling & Henderson, 160 Elgin St., Box 466, Station A, Ottawa, Ontario, Canada

Wittenberg, Malcolm B., 1054 M St. NW., Washington, D.C. 20007

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,745,507, A. G. Bodine, Jr., GEOPHYSICAL TRANSDUCER, filed Mar. 16, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–578–CC, *Albert G. Bodine* v. *United Geophysical Corp. and Continental Oil Co.*

2,763,958, J. H. Lemelson, INFLATED AERIAL TOY; **3,570,174,** same, WHEELED ACTION TOY, filed Mar. 15, 1973, D.C., S.D.N.Y., Doc. 73–C–1109, *Jerome H. Lemelson* v. *Mego Corporation.*

2,780,611, T. A. Te Grotenhuis, PIGMENTED SILICONE ELASTOMERS, filed Mar. 22, 1973, D.C., N.D. Ohio (Cleveland), Doc. C–73–297, *Eastwood Chemical, Inc.* v. *Mameco International.*

2,970,516, Wright and Butler, VEHICLE DISC BRAKE ASSEMBLY, filed Feb. 6, 1973, D.C., E.D. Pa. (Philadelphia), Doc. CA–73–267, *Dunlop Holdings Limited* v. *The Budd Company.*

2,919,990, Podlesak, Kraft and Miller, METHOD OF CONTINUOUSLY PRODUCING PACKAGED UNITS, filed May 2, 1962, D.C., W.D. Wis. (Madison), Doc. 3555–C, *National Dairy Products Corporation* v. *The Swiss Colony, Inc.* Injunction granted with damages to be determined, Mar. 27, 1973. Same, filed May 15, 1963, D.C., W.D. Wis. (Madison), Doc. 3637–C, *National Dairy Products Corporation* v. *Jeffrey Cheese Co., Inc.* Plaintiff's request injunction granted with damages to be determined, Mar. 27, 1973. Same, filed May 15, 1963, D.C., W.D. Wis. (Madison), Doc. 3639–C, *National Dairy Products Corporation* v. *Armour and Company.* Plaintiff's request for injunction granted with damages to be determined, Mar. 27, 1973.

2,970,783, D. A. Cheyette, COMPOSITE WEARING PARTS FOR CRUSHERS AND THE LIKE, filed Dec. 28, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–3050–IH, *Rex Chainbelt Inc.* v. *DFC Company (Inc.).* Judgment, claims patent invalid and void. Plaintiff has violated the antitrust laws; plaintiff enjoined, Mar. 28, 1973.

3,011,920, C. R. Shipley, Jr., METHOD OF ELECTROLESS DEPOSITION ON A SUBSTRATE AND CATALYST SOLUTION THEREFOR, filed Dec. 6, 1972, D.C. Mass. (Boston), Doc. 72–3697–C, *Kollmorgan Corporation* v. *Shipley Company, Inc.*

3,037,178, H. Pien, LOAD CELL, filed Mar. 16, 1973, D.C. Ariz. (Phoenix), Doc. C–73–71 PHX, *BLH Electronics, Inc.* v. *Interface, Inc.*

3,029,291, A. J. Dietzler, METHOD FOR MAKING ALKYLIDENEBIS (DIBROMOPHENOLS), filed Mar. 26, 1973, D.C. Del. (Wilmington), Doc. 4614, *Great Lakes Chemical Corporation* v. *The Dow Chemical Company.*

3,094,167, W. H. Hine, Jr., APPARATUS FOR RAISING AND QUICKLY RESTORING THE LEVEL OF WATER IN WELLS, filed Mar. 30, 1973, D.C., N.D. Tex. (Amarillo), Doc. CA–2–1380, *Fluid Flow Services, Inc. et al.* v. *Layne Texas Company.*

3,093,520, Greenstadt and Ziers, DRAPERY APPARATUS, filed Mar. 16, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–574–CC, *Lidkiron, Corporation* v. *John H. Higgins.*

3,114,425, G. L. Adams, STEPPER-TYPE TRAMMING SUPPORT FOR MINING EQUIPMENT; **3,278,236,** Adams and Govin, DUAL AUGERING MACHINE, filed Mar. 21, 1973, D.C., N.D. W. Va. (Elkins), Doc. C–73–11–F, *The Salem Tool Company* v. *Fair Quip Corp., V.C. Industries, Inc., and Interstate Engineers.*

3,115,230. (See 2,900,150.)

3,127,293, A. J. Trenteseaux, METHOD OF PRODUCING UNWOVEN CLOTHS AND VELVETS AND APPARATUS USED THEREFOR, filed Oct. 30, 1972, D.C., N.D. Ga. (Rome), Doc. 2520, *Deering Milliken, Inc.* v. *Foundation Carpet Mills, Inc.* Same, filed Dec. 7, 1972, D.C., N.D. Ga. (Rome), Doc. 2539, *Deering Milliken, Inc.* v. *Cline Industries, Inc. and B. L. Cline.*

3,134,718, A Nobile, PREGNA-1,4-DIENES AND COMPOSITIONS CONTAINING SAME, filed Mar. 23, 1973, D.C.N.J. (Newark), Doc. 404–73–C, *Schering Corporation* v. *Premo Pharmaceutical Laboratories, Incorporated.*

3,173,583, E. A. Wahl, BIN ACTIVATOR, filed Mar. 2, 1973, C.A. Sixth Circuit, Ohio (Cincinnati), Doc. 72–1661, *Eugene A. Wahl and Vibra Screw, Inc.* v. *Vigranetics, Inc.* The judgment of the District Court is affirmed, Mar. 2, 1973.

3,206,898, Chavannes and Fielding, APPARATUS FOR EMBOSSING AND LAMINATING MATERIALS; **3,416,984,** same, METHOD AND APPARATUS FOR MAKING CELLULAR MATERIAL FROM THERMOPLASTIC SHEETS; Reg. No. 922,998 (BUBBLE WARP), Sealed Air Corporation, filed Mar. 28, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–662–RJK, *Sealed Air Corporation* v. *Richard Hossoff, doing business as Richard's Premiums and Bubble Pak, Inc.*

3,299,049, H. Goldberg, HEARING AID, filed Mar. 16, 1973, D.C., W.D.N.Y. (Buffalo), Doc. C–1973–139, *Hyman Goldberg* v. *Unitron Industries, Ltd.*

3,233,512, S. O. Sampson, STEREO TAPE CONTROL APPARATUS FOR A SLIDE PROJECTOR, filed Jan. 8, 1969, D.C., S.D.N.Y., Doc. 69–C–43, *Sidney O. Sampson* v. *Ampex Corp.* Judgment against the plaintiff Sidney O. Sampson, dismissing the complaint, Oct. 27, 1971.

3,278,236. (See 3,144,425.)

3,288,520, K. E. B. Krutzikowsky, COLLAPSIBLE TRAILER, filed Sept. 27, 1971, D.C., E.D. Wis. (Milwaukee), Doc. 71–C–488, *K. E. B. Krutzikowsky and American Sterling Ent., Inc.* v. *Trade Winds Co., Inc. and Outboard Marine Corp.* Stipulation of dismissal pursuant to Rule 41(a)(1) F.R.C.P., Jan. 18, 1973.

3,325,573, Boon and Hager, MANUFACTURE OF FOAM MATERIAL, filed Mar. 28, 1973, D.C. Md. (Baltimore), Doc. 73–279–N, *Reeves Brothers, Inc.* v. *Wm. T. Burnett & Company, Inc.*

3,340,987, D. G. Bastian, REPEAT-CHARACTER-DELAY CODE TRANSLATOR, filed Nov. 6, 1972, D.C.N.J. (Newark), Doc. C–1794–72, *George B. Greene* v. *The Singer Company.*

3,382,285, R. R. Egan and L. D. Smiens, LIQUID NONIONIC POLYOXYALKYLENE SURFACE-ACTIVE MATERIALS, filed Aug. 15, 1972, D.C., S.D. Ohio (Cincinnati), Doc. 8392, *Ashland Oil, Inc.* v. *BASF-Wyandotte Chemical Corp.* Voluntary dismissal under Rule 41(a)(1), Aug. 22, 1972.

3,416,507, A. J. Little, ETHER INJECTION ASSEMBLY FOR INTERNAL COMBUSTION ENGINE, filed Dec. 15, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c3174, *Stewart-Warner Corporation* v. *Colt Industries Operating Corp.* Order: Adjudged plaintiff's complaint dismissed with prejudice, patent declared invalid, defendant's counterclaims still pending, Mar. 19, 1973.

3,416,984. (See 3,206,898.)

3,422,189, J. A. Rider, METHOD AND COMPOSITIONS FOR THE TREATMENT OF GASTRO-INTESTINAL DISORDERS, filed Aug. 10, 1970, D.C., E.D. Mich. (Detroit), Doc. 35222, *Atlas Chemical Industries, Inc.* v. *Moraine Products.* Judgment order: 3,422,189 invalid for prior public use by third parties in Midland, Michigan, more than one year prior to the filing of the application for the Rider patent, Mar. 9, 1973.

3,479,030, A. Merola, HOLLOW, METAL BALL BAT, filed Mar. 27, 1973, D.C. Pa. (Pittsburgh), Doc. 73-248 CA, *Aluminum Co. of America and Alcoa Sport Products Co.* v. *Amerola Products Corp., Anthony Merola, and Anthony Merola and Roger Merola, partners, trading as True-Cue Company.*

3,510,004, J. Hoeltzenbein, ARTIFICIAL KIDNEY; Re. 27,510, same, filed Mar. 20, 1973, D.C. Del. (Wilmington), Doc. 4609, *Baxter Laboratories, Inc.* v. *Vernitron Corporation.*

3,517,989, C. H. Wilson, SPECTACLES, filed Mar. 27, 1973, D.C., S.D.N.Y., Doc. 73-1270, *Rayex Corporation* v. *Foster Grant Co. Inc.*

3,538,906, Heraty and Ver Halen, BARBECUE SUPPORT ARRANGEMENT; Reg. No. 811,229 (WEBER), Weber-Stephen Products Co., filed Mar. 26, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c762, *Weber Stephen Products Co.* v. *W. C. Bradley Co., Midwest Warehouse Corp., and John D. Sutton.*

3,540,772, R. C. Weller, CAMPER TIE DOWN, filed Mar. 21, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-602-CC, *Raymond C. Weller* v. *Coast Fabrication, Inc. and Michael Brown.*

3,570,174. (See 2,763,958.)

3,601,202, H. Steffe, RIDGE LEVELER AND STALK COVERER, filed Feb. 12, 1973, D.C., N.D. Iowa (Sioux City), Doc. 73-C-3014-W, *Harlan E. Steffe* v. *Lundell Manufacturing Company, Inc.*

3,641,391, A. R. Badewitz, DEVICE FOR RESTORING CATHODE EMISSION IN CATHODE RAY TUBE GUNS, filed Mar. 26, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c761, *Beltron Inc. and Appleway Electronics Inc.* v. *RCA Distributing Corp.*

3,650,766, Y. Smadar, EXTRUDED FOOD PRODUCTS AND METHOD OF PRODUCING SAME, filed Mar. 21, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c725, *DCA Food Industries Inc.* v. *Korlow Corp et al.* Order: complaint dismissed without prejudice, Mar. 22, 1973.

D. 225,843, R. P. Buhk, CHAIR BODY, filed Jan. 16, 1973, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 73-128, *Metalstand Company, Inc.* v. *Steelcase Inc.* Stipulation of dismissal under Rule 41(a)(1), Mar. 23, 1973.

Re. 27,510. (See 3,510,004.)

Reg. No. 811,229. (See 3,538,906.)

Reg. No. 922,998. (See 3,208,898.)

Certificates of Correction for the Week of Nov. 13, 1973

D. 227,367	3,725,159	3,740,646	3,745,184
2,802,733	3,725,302	3,740,785	3,745,197
3,582,747	3,725,344	3,740,892	3,745,300
3,592,874	3,725,503	3,740,925	3,745,403
3,625,865	3,726,193	3,741,292	3,745,593
3,627,563	3,726,492	3,741,294	3,745,838
3,631,766	3,726,598	3,741,389	3,745,842
3,633,416	3,726,842	3,741,551	3,745,944
3,634,003	3,726,852	3,741,611	3,746,150
3,635,788	3,726,956	3,741,649	3,746,235
3,637,368	3,727,046	3,741,666	3,746,415
3,637,594	3,728,777	3,741,768	3,746,467
3,642,425	3,729,075	3,741,787	3,746,526
3,651,113	3,729,253	3,741,858	3,746,563
3,655,529	3,730,483	3,741,905	3,746,597
3,659,159	3,730,704	3,741,907	3,746,648
3,669,237	3,730,854	3,741,910	3,746,706
3,669,964	3,733,288	3,741,931	3,746,818
3,672,998	3,734,729	3,741,943	3,746,842
3,673,935	3,734,730	3,741,990	3,746,921
3,677,495	3,734,754	3,742,141	3,746,959
3,684,873	3,734,836	3,742,327	3,746,975
3,685,612	3,734,880	3,742,468	3,747,236
3,686,320	3,735,791	3,742,490	3,747,359
3,687,744	3,736,016	3,742,495	3,747,377
3,690,107	3,736,105	3,742,574	3,747,532
3,691,214	3,736,319	3,742,591	3,747,633
3,693,374	3,736,437	3,742,671	3,747,650
3,694,527	3,736,442	3,742,709	3,747,695
3,699,076	3,736,732	3,742,795	3,747,697
3,702,570	3,736,736	3,742,906	3,747,741
3,702,854	3,736,755	3,742,961	3,748,048
3,703,500	3,736,779	3,743,088	3,748,140
3,704,155	3,737,266	3,743,199	3,748,153
3,705,083	3,737,401	3,743,211	3,748,535
3,705,630	3,737,446	3,743,309	3,748,739
3,707,524	3,737,527	3,743,369	3,748,845
3,708,312	3,737,541	3,743,386	3,748,851
3,708,511	3,737,658	3,743,463	3,748,868
3,709,399	3,737,670	3,743,612	3,748,906
3,709,790	3,737,989	3,743,800	3,749,080
3,710,232	3,738,059	3,743,860	3,749,132
3,710,567	3,738,114	3,743,970	3,749,161
3,710,669	3,738,144	3,744,005	3,749,175
3,711,820	3,738,263	3,744,118	3,749,194
3,712,916	3,738,269	3,744,204	3,749,945
3,712,924	3,738,716	3,744,207	3,750,020
3,713,025	3,738,719	3,744,330	3,750,187
3,713,370	3,738,786	3,744,332	3,751,011
3,714,127	3,738,815	3,744,449	3,751,054
3,716,275	3,738,825	3,744,452	3,751,233
3,716,430	3,739,011	3,744,681	3,751,250
3,719,656	3,739,539	3,744,736	3,751,259
3,720,400	3,739,568	3,744,781	3,751,404
3,721,785	3,739,645	3,744,788	3,751,477
3,723,127	3,739,680	3,744,818	3,752,216
3,723,458	3,739,751	3,744,902	3,752,642
3,723,792	3,739,890	3,744,915	3,752,783
3,724,104	3,740,273	3,744,966	3,752,802
3,724,651	3,740,343	3,745,101	3,752,850
3,725,020	3,740,635	3,745,168	3,760,397

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

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Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health; Chief, Patents Branch; Westwood Building; Bethesda, Md. 20014

Patent 3,734,930. Direct Synthesis of (Trans-Delta) 9-Tetrahydrocannabinol From Olivetol and (+)—Trans-De Ta 2-Carene Oxide. Filed Sept. 22, 1971. Patented May 22, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents; 18th and C Streets NW.; Washington, D.C. 20240

Patent application 383,233. Preparation of High Flux Cellulose Acetate Membranes and Hollow Fibers From Prefabricated Low Flux Specimens. Filed July 27, 1973. PC $3/MF $1.45.

Patent application 383,234. Support for Dynamic Membrane. Filed July 27, 1973. PC $3/MF $1.45.

Patent 3,728,671. Multiple Electrode, Directional, Acoustic Source. Filed Apr. 30, 1970. Patented Apr. 17, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE ARMY
Chief, Patents Division; Office of Judge Advocate General; Patent Division Room 2C–455; Pentagon; Washington, D.C. 20310

Patent 3,567,382. Isocyanide Indicator. Filed Apr. 23, 1968. Patented Mar. 2, 1971. Not available NTIS.

Patent 3,573,185. Anodic Sputtering. Filed Dec. 16, 1968. Patented Mar. 30, 1971. Not available NTIS.

Patent 3,599,077. High-Efficiency, Controllable DC to AC Converter. Filed June 18, 1970. Patented Aug. 10, 1971. Not available NTIS.

Patent 3,605,136. Powered Litter Rack. Filed Oct. 27, 1969. Patented Sept. 20, 1971. Not available NTIS.

Patent 3,624,552. Glass Laser Coupling Reflector. Filed Aug. 5, 1969. Patented Nov. 30, 1971. Not available NTIS.

Patent 3,628,861. Multibeam Optical Wave Transmission. Filed Aug. 4, 1969. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,629,580. Method and Apparatus for Obtaining High Resolution X-Ray Interference Patterns. Filed July 13, 1970. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,629,601. High-Resolution Optical Upconverter. Filed May 15, 1970. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,645,633. Chromacorder. Filed Jan. 11, 1971. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,645,694. Autorotating Body Gas Detector and Method of Using the Same. Filed Sept. 16, 1968. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,358. Optical Upconverter. Filed May 15, 1970. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,445. Adaptive Extremal Coding of Analog Signals. Filed Oct. 2, 1970, Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,457. High Speed Greatest of Comparator Circuit. Filed Oct. 6, 1965. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,484. Diode Switched RF Attenuator. Filed July 8, 1970. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,526. Fifo Shift Register Memory With Marker and Data Bit Storage. Filed Mar. 17, 1970. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,818. Compensator Output Solid-State Differential Accelerometer. Filed Jan. 8, 1970. Patented Mar. 7, 1972. Not available NTIS.

Patent 3,647,170. Helicopter Sling Load Electrical Connector. Filed May 4, 1970. Patented Mar. 7, 1972. Not available NTIS.

Patent 3,653,355. Mud Anchor. Filed Aug. 6, 1970. Patented Apr. 4, 1972. Not available NTIS.

Patent 3,653,432. Apparatus and Method for Unidirectionally Solidifying High Temperature Material. Filed Sept. 1, 1970. Patented Apr. 4, 1972. Not available NTIS.

Patent 3,654,544. Thermal Equilibrium Regulator for a Thermoelectric Power Source. Filed Jan. 13, 1970. Patented Apr. 4, 1972. Not available NTIS.

Patent 3,654,553. Remotely Sensing Optical Tachometer. Filed July 1, 1970. Patented Apr. 4, 1972. Not available NTIS.

Patent 3,656,002. Switching Circuit. Filed Nov. 24, 1970. Patented Apr. 11, 1972. Not available NTIS.

Patent 3,657,534. Digital Scale for Tomography and Method of Using Same. Filed Mar. 12, 1970. Patented Apr. 18, 1972. Not available NTIS.

Patent 3,662,649. Self-Locking Hydraulic Linkage. Filed Mar. 23, 1970. Patented May 16, 1972. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents;
Washington, D.C. 20545

Patent 3,429,187. Ring Slit Conifuge. Filed Nov. 22, 1967. Patented Feb. 25, 1969. Not available NTIS.

Patent 3,577,344. Fibrous Thermal Insulation and Method of Making Same. Filed Jan. 29, 1969. Patented May 4, 1971. Not available NTIS.

Patent 3,604,251. A Capacitive Ultrasonic Device for Non-Destructively Testing a Sample. Filed Apr. 18, 1969. Patented Sept. 14, 1971. Not available NTIS.

Patent 3,711,327. Plasma Arc Sprayed Modified Alumina High Emittance Coatings for Noble Metals. Filed Jan. 4, 1968. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,711,394. Continuous Oxygen Monitoring of Liquid Metals. Filed Oct. 29, 1970. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,711,744. Passive Energy Dump for Superconducting Coil Protection. Filed June 1, 1972. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,715,535. Acceleration Actuated Switch. Filed July 20, 1971. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,716,782. Capacitance Gage for Measuring Small Distances. Filed June 3, 1971. Patented Feb. 13, 1973. Not available NTIS.

Patent 3,718,720. Method for Manufacturing Fibrous, Carbonaceous Composite Having Near Isotropic Properties. Filed Jan. 12, 1971. Patented Feb. 27, 1973. Not available NTIS.

Patent 3,720,098. Ultrasonic Apparatus and Method for Non-Destructively Measuring the Physical Properties of a Sample. Filed Mar. 22, 1971. Patented Mar. 13, 1973. Not available NTIS.

Patent 3,720,777. Low Loss Conductor for A.C. or D.C. Power Transmission. Filed Aug. 25, 1971. Patented Mar. 13, 1973. Not available NTIS.

Patent 3,723,013. Alignment System. Filed Oct. 23, 1970. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,724,215. Decomposed Ammonia Radioisotope Thruster. Filed May 19, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,724,373. Retarded Glide Bomb. Filed Dec. 15, 1970. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,725,688. Digital Subtraction Device. Filed Sept. 3, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,725,940. Horizontal Vehicle Mounted Omnidirectional Loop Antenna Having a Shorting Stub. Filed Feb. 8, 1972. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,726,642. Suppression of Corrosion of Iron in Sodium. Filed Dec. 29, 1971. Patented Apr. 10, 1973. Not available NTIS.

Patent 3,726,768. Lickel Plating Baths Containing Aromatic Sulfonic Acids. Filed Apr. 23, 1971. Patented Apr. 10, 1973. Not available NTIS.

Patent 3,727,077. Small Current Integrator. Filed Aug. 25, 1971. Patented Apr. 10, 1973. Not available NTIS.

Patent 3,727,083. All Bonded Thermionic Energy Converter. Filed Sept. 1, 1970. Patented Apr. 10, 1973. Not available NTIS.

Patent 3,728,047. Solids Accumulator Pump System. Filed Sept. 13, 1971. Patented Apr. 17, 1973. Not available NTIS.

Patent 3,729,585. Device and Method for Improving the Vertical Resolution of a Two-Dimensional Television-Based Radiation Detection System. Filed Aug. 26, 1971. Patented Apr. 24, 1973. Not available NTIS.

Patent 3,730,422. Continuous Flow Centrifuge With Means for Reducing Pressure Drop. Filed May 25, 1971. Patented May 1, 1973. Not available NTIS.

Patent 3,730,689. Apparatus for Leaching Core Material From Sheared Segments of Clad Nuclear Fuel Pins. Filed Feb. 12, 1971. Patented May 1, 1973. Not available NTIS.

Patent 3,731,100. Monitor of the Concentration of Radioactive Iodine in a Stream of Gas. Filed Apr. 7, 1971. Patented May 1, 1973. Not available NTIS.

Patent 3,733,546. Beam Current Position, Intensity and Profile Monitoring by Resistive Detection of Beam Image Wall Currents. Filed July 21, 1971. Patented May 15, 1973. Not available NTIS.

Patent 3,734,826. Method of Suppressing the Formation of Methyl Iodine in a Water-Cooled Nuclear Reactor. Filed July 20, 1972. Patented May 22, 1973. Not available NTIS

Patent 3,735,010. Skull-Melting Crucible. Filed Aug. 23, 1972. Patented May 22, 1973. Not available NTIS.

Patent 3,735,736. Method for Growing Edible Aquatic Animals on a Large Scale. Filed Feb. 8, 1971. Patented May 29, 1973. Not available NTIS.

Patent 3,736,430. Position Indicating System and Method Therefor. Filed Oct. 23, 1969. Patented May 29, 1973. Not available NTIS.

Patent 3,736,755. Irrigation System. Filed Feb. 23, 1972. Patented June 5, 1973. Not available NTIS.

Patent 3,736,798. Permanent Magnet Probe Flowmeter. Filed June 24, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,309. Novel Platinum-Rhodium-Tungsten Alloy. Filed Feb. 15, 1972. Patented June 5, 1973. Not available NTIS.

Patent 3,738,154. Method of Measuring Entrained Gas in a Liquid Using a Converging-Diverging Nozzle. Filed Oct. 20, 1971. Patented June 12, 1973. Not available NTIS.

Patent 3,740,118. Self Strain Biased Ferroelectric Electro-optics. Filed Dec. 1, 1971. Patented June 19, 1973. Not available NTIS.

Patent 3,740,274. High Post-Irradiation Ductility Process. Filed Apr. 20, 1972. Patented June 19, 1973. Not available NTIS.

Patent 3,741,735. Coating Molybdenum With Pure Gold. Filed Jan. 8, 1964. Patented June 26, 1973. Not available NTIS.

[FR Doc. 73-22138; Filed 10-16-73; 8:45 am]

Dedications

Re. No. 26,216.—*John B. English*, Tokyo, Japan. BRIGHT FINISHED ALUMINUM ALLOY SYSTEM. Patent dated May 30, 1957. Dedication filed July 18, 1973, by the assignee, *Reynolds Metals Company*.

Hereby dedicates to the Public the entire term of said patent.

2,772,496.—*Harold A. Meyrick*, Nashville, and *Walter B. Ellsworth*, Indianapolis, Ind. ILLUMINATED SIGN STRUCTURE. Patent dated Dec. 4, 1956. Dedication filed Dec. 8, 1972, by the assignee, *SCM Corporation*.

Hereby dedicates all claims of said patent.

2,977,048.—*Ernest G. Andrews*, Baldwin, and *Edward L. Vibbard*, Jackson Heights, N.Y. AUTOMATIC CALCULATOR. Patent dated Mar. 28, 1961. Dedication filed June 19, 1973, by the assignee, *Bell Telephone Laboratories, Incorporated*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,230,178.—*Daniel Bennahmias*, Oakland, Calif. BRIGHT PASTEL COMPOSITIONS CONTAINING DAYLIGHT FLUORESCENT PIGMENTS. Patent dated Jan. 18, 1966. Dedication filed Sept. 18, 1972, by the assignee, *Hercules Incorporated*.

Hereby dedicates said patent to the Public.

3,249,270.—*Benjamin Zuckerman*, New York, N.Y. GARMENT SUPPORT MEANS. Patent dated May 3, 1966. Dedication filed June 6, 1973, by the assignee, *Mister Hanger, Inc.*

Hereby dedicates to the Public the term of said patent still in effect on or after Mar. 22, 1980 for the remainder of the life of said patent.

3,382,492.—*George R. Santana*, Saratoga, Calif. MAGNETIC DATA RECORD FORMATTING. Patent dated May 7, 1968. Dedication filed July 5, 1973, by the assignee, *International Business Machines Corporation*.

Hereby dedicates to the Public the remainder of the term of said patent.

Disclaimers

Re. No. 26,957.—*James L. McConnell*, St. Joseph, Mich. ELECTRONIC TIMER ESCAPEMENT AND COIN COUNTER. Patent dated Sept. 27, 1970. Disclaimer filed Feb. 21, 1973, by the assignee, *Whirlpool Corporation*.

Hereby enters this disclaimer to claims 7, 8, 9, 15, 16, 23, 26, 28, 34, 35, 36, 41, 42 and 43 of said patent.

3,301,879.—*Albert Wettstein*, Riehen, and *Georg Anner*, *Peter Wieland*, and *Karl Heusler*, Basel, Switzerland. 19-NOR-ANDROSTENES. Patent dated Jan. 31, 1967. Disclaimer filed July 11, 1973, by the assignee, *Ciba Corporation*.

Hereby enters this disclaimer to claims 1–4 of said patent.

3,610,336.—*Phillip S. Sizer*, Dallas, Tex. LANDING NIPPLE WITH LOCATOR AND ORIENTING MEANS. Patent dated Oct. 5, 1971. Disclaimer filed Oct. 12, 1973, by the assignee, *Otis Engineering Corporation*.

Hereby enters this disclaimer to claims 1 and 6 of said patent.

3,723,919.—*Robert Adler*, Northfield, Ill. ACOUSTIC SURFACE WAVE FILTERS WITH REFLECTION SUPPRESSION. Patent dated Mar. 27, 1973. Disclaimer filed Oct. 12, 1973, by the assignee, *Zenith Radio Corporation*.

Hereby enters this disclaimer to claims 1–4 of said patent.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 13, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-17-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-09-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-17-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-07-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-18-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	3-07-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-01-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-18-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-30-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-12-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-04-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-02-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-07-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-13-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-20-72

Expiration of patents: The patents within the range of numbers indicated below expire during November 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,769,173 to 2,772,414, inclusive
Plant Patents..... Numbers 1,826 to 1,831, inclusive

REISSUES

NOVEMBER 13, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,807
MACHINE FOR PRODUCING TOOTHPICKS

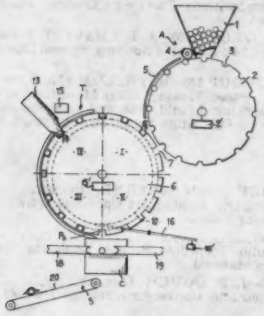
Roger Soyez, Le Val (La Celle-sur-Loire), Nievre, France, assignor to Soyez Freres Donzy, Nievre, France

Original No. 3,572,201, dated Mar. 23, 1971, Ser. No. 776,164, Nov. 15, 1968. Application for reissue Oct. 18, 1971, Ser. No. 190,206

Claims priority, application France, July 16, 1968, 159,394

Int. Cl. B23d *21/02, 21/04;* B26d *7/06*

U.S. Cl. 83—119 24 Claims



A machine for producing toothpicks from tubes of synthetic material comprising an automatic feeding and orienting mechanism for feeding individual tubes to a cutting device which acts to cut the point and heel of the toothpick to the required profile. An arrangement is provided for automatically transporting each formed toothpick from the cutting station to a wrapping device.

27,808
POWER LADDER

Yigal Michelson, P.O. Box 71, Pardess-Hanna, Israel

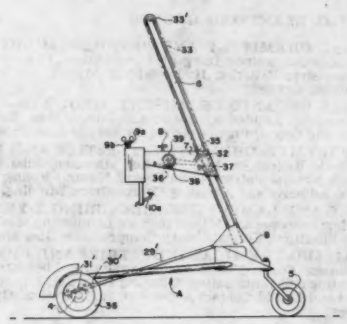
Original No. 3,424,271, dated Jan. 28, 1969, Ser. No. 605,347, Dec. 28, 1966. Application for reissue Nov. 27, 1970, Ser. No. 93,517

Claims priority, application Israel, Oct. 17, 1966, 27,706

Int. Cl. E04g *1/18, 3/10, 3/16*

U.S. Cl. 182—14 11 Claims

A power ladder that has a V-shaped frame that can straddle a tree, the frame supporting an upwardly extending inclined tower on which a carriage moves. Manually operated control means is provided in the carriage for operatively connecting a power source to either or both front wheels that support the outer ends of the arms of the frame for moving and steering the power ladder in a desired direction and this can be accomplished regardless of the position of the carriage on the tower.



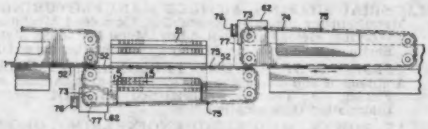
27,809
HIGH SPEED AUTOMATIC CARD EMBOSSER

Jacob H. Drillick, Hackensack, N.J., assignor to Data Card Corporation, St. Paul, Minn.

Original No. 3,638,563, dated Feb. 1, 1972, Ser. No. 57,960, July 24, 1970, which is a continuation-in-part of Ser. No. 769,245, Oct. 21, 1968, and Ser. No. 861,432, Sept. 26, 1969. Application for reissue Aug. 7, 1972, Ser. No. 278,501

Int. Cl. B41j *7/40*

U.S. Cl. 101—18 11 Claims



A machine for embossing credit cards having data reading means, a computer controlling selectively operable embossing punches corresponding to each character, and indexing means for moving the card past each embossing punch.

PLANT PATENTS

GRANTED NOVEMBER 13, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,407
ROSE PLANT
Gayle Kent McDaniel, Carlton, Oreg., assignor to Carlton Rose Nurseries, Carlton, Oreg.
Filed Jan. 27, 1972, Ser. No. 221,457
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—20 **1 Claim**

A hybrid tea rose plant of the greenhouse type, of a distinctive orange color, originated by crossing an unnamed seedling (No. 39–B–67) as the seed parent, with an unnamed seedling (No. 44–E–66) as the pollen parent.

3,408
CHRYSANTHEMUM PLANT
John Robert Culbert, Monticello, Ill., assignor to University of Illinois Foundation, Urbana, Ill.
Filed Mar. 2, 1972, Ser. No. 231,427
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—81 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant substantially as herein shown and described, characterized particularly as to novelty by decorative type flowers of satiny deep purplish pink color that resist fading to a remarkable degree even when exposed to extremely high temperatures and which open slowly and retain their form over a long time extending the useful "shelf life," by flower buds which develop normally in approximately 9 weeks from start of initiation without delay or stall even when grown under extremely high temperatures, and by strong plants which average 4 to 5 breaks per pinched plant making a showy display of the 4½" to 5" flowers.

3,409
CHRYSANTHEMUM PLANT
Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed June 15, 1971, Ser. No. 153,456
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—79 **1 Claim**

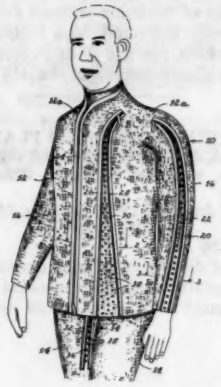
1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Wildfire by its more intense red-bronze color.

PATENTS

GRANTED NOVEMBER 13, 1973

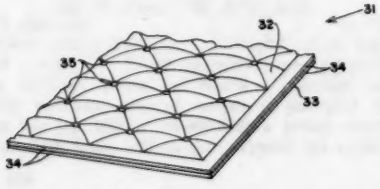
GENERAL AND MECHANICAL

3,771,169
ADJUSTABLE SIZE WET SUIT
Everett W. Edmund, P.O. Box 601, Camden, N.J.
Continuation-in-part of Ser. No. 826,357, May 21, 1969. This application Aug. 10, 1970, Ser. No. 62,352
Int. Cl. B63c *11/04*
U.S. Cl. 2—2.1 R **2 Claims**



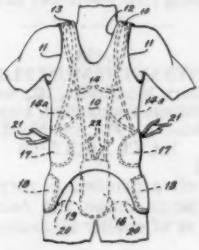
A shirt or jacket and pants of insulating unicellular foam material so designed that they will exclude water when used as a diver's wet suit but are further provided with a system of zippers and method of construction that will allow the garment to be worn comfortably for many hours out of the water without interfering with its prime function of thermal protection when the diver is in the water this being accomplished by a divergent spacing of a long jacket zipper in cooperative relation with and in juxtaposition with long divergent zippers on the arms going over the shoulders, also including pants waist zippers positioned in cooperative relation with long pants leg zippers extending upwardly on the inside of the legs, thence crossing to the top of the thigh and thence upwardly to the lower abdomen.

3,771,170
INFLATABLE INSULATING MATERIAL
Gonzalo S. Leon, 25 Plympton Rd., Sudbury, Mass.
Filed July 17, 1972, Ser. No. 272,303
Int. Cl. A41d *13/00*
U.S. Cl. 2—2 **22 Claims**



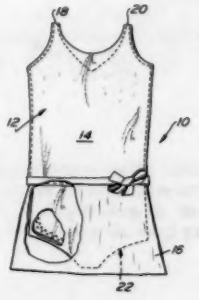
Disclosed herein is a thermal insulating material formed of sheets of non-porous flexible material hermetically sealed together to define an inflatable volume divided into a two-dimensional array of compartments joined by gas communication passages. The boundaries between the compartments of the array define a plurality of intersecting lines along which the array can be easily flexed and a valve is provided for inflation of the compartmented volume.

3,771,171
ATHLETIC PROTECTIVE EQUIPMENT
Hal D. Mitchell, Aptos, Calif., assignor to A-T-O Inc., Willoughby, Ohio
Filed Aug. 31, 1972, Ser. No. 285,205
Int. Cl. F41h *1/02*
U.S. Cl. 2—2.5 **10 Claims**



Protective equipment for players of football and other athletic activities and games in which bodily contact is significant. The equipment provides protection for the torso, hips and thighs in a manner to meet the anatomical needs of the athlete during competition whereby improved maneuverability, efficiency and protection is obtained without cumbersome components.

3,771,172
BATHING SUIT
Herbert Barg, Darby, Pa., assignor to True Form Foundations Inc., Darby, Pa.
Filed Jan. 31, 1972, Ser. No. 221,901
Int. Cl. A41d *7/00*
U.S. Cl. 2—67 **9 Claims**



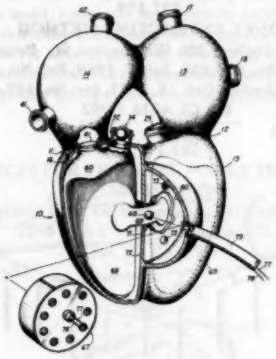
A bathing suit is disclosed comprised of discrete inner and outer garments to be worn simultaneously. The inner garment

performs the function of control of the figure, whereas the outer garment performs the function of design and appearance.

3,771,173
ARTIFICIAL HEART

Everette Lamb, Jr., Tyler, Tex., assignor to James W. Fair, Tyler, Tex., a part interest

Filed June 9, 1971, Ser. No. 151,282
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **7 Claims**



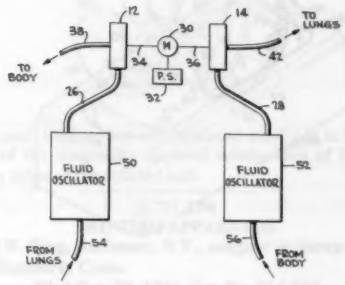
An artificial heart capable of acting as a substitute for a natural heart comprising a casing constructed of a material compatible with tissue of a living being and of a size to fit within the chest cavity of a living being after removal of the natural heart. Tube means are provided on the casing for connection to the natural blood vessels of the living being with valve means operatively associated with the tube means for controlling the flow of blood therethrough. The casing includes a pair of cavity portions capable of functioning as the two ventricles of the natural heart, with independent diaphragm means operatively associated with each cavity portion. A pressure plate is reciprocally mounted in each cavity portion and is operatively associated with the diaphragm means for effecting a pumping action of blood through the tube means and into the blood vessel in simulation of the natural heart. A single reciprocally operable solenoid means is operatively associated with the two pressure plates for simultaneously effecting operation of each pressure plate in a pumping operation. The heart is cyclically controlled by a pulser operable power pack adapted to be worn by the living being externally of the body. The power pack includes control means adapted to be connected through input supply lines to the solenoid means for controlling the cyclic rate of the pumping operation.

3,771,174
ARTIFICIAL HEART UTILIZING BLOOD PULSING FLUID OSCILLATORS

Donald E. Wortman, 609 Muriel St., Rockville, Md.

Filed Apr. 28, 1972, Ser. No. 248,460
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **6 Claims**

An artificial heart intended for supplementing or replacing the natural heart for circulating blood through the body. The heart relies on the dynamic flow properties of the blood for its operation, utilizing a pair of fluid oscillators in combination with nonpulsitive valveless pumps. The pumps have pressure-volume flow characteristics that simulate the natural heart and

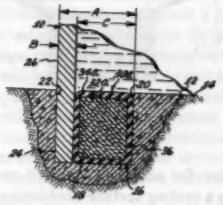


the pressure sensitive fluid oscillators increase their frequency in accordance with the flow of blood therethrough.

3,771,175
SEAL

Adam D. Goettl, 4960 L. Palomino Dr., Phoenix, Ariz.

Filed Sept. 23, 1971, Ser. No. 183,049
Int. Cl. F16j *15/14*; E04h *3/16*
U.S. Cl. 4—172.19 **5 Claims**



A seal for use in fluid containing structures of the type having an upstanding wall the lower edge of which is inserted within an endless U-shaped trough formed in a base. The seal is positioned within the trough and is exposed to the fluid within the container for absorbing a portion of the fluid and expanding in response thereto to seal the joint between the wall and the base.

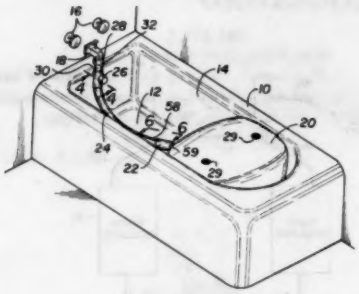
3,771,176
BATHTUB CUSHION LIFT

Harry H. Herman, Sr., 10281 E. Bay Harbor Dr., Bay Harbor Island, Miami Beach, Fla.

Filed May 21, 1971, Ser. No. 145,712
Int. Cl. A47k *3/12*
U.S. Cl. 4—185 L **5 Claims**

A bathtub cushion lift is provided which has an inflatable shell adapted to be positioned on the floor of a bathtub and to be connected to the bathtub spout or faucet. Water under pressure is fed through the bathtub spout into the inflatable shell to selectively inflate it to its full elevation, wherein its supporting surface is elevated to the approximate height of the bathtub walls to provide a secure cushion-like support that can then be utilized as a seat upon which a person desirous of taking a bath may sit. Once seated on the cushion-like supporting surface the person may swing his legs over the bathtub wall and deflate the cushion whereby he is gradually lowered

to the floor of the bathtub. After the bath, the shell can once again be filled to elevate the user upwardly to the top of the



bathtub walls where by simply swinging his legs over the bathtub wall he can get out of the bathtub.

3,771,177

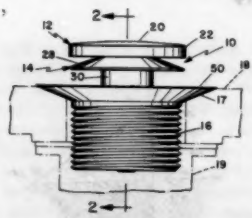
SELF-CONTAINED DRAIN VALVE

Chester A. Rogers, 5761 Campanile Way, San Diego, and George F. Hetzel, 13525 Scot's Way, Poway, both of Calif.

Filed July 12, 1971, Ser. No. 161,709

Int. Cl. A47k *1/14*; E03c *1/26*

U.S. Cl. 4—287 **11 Claims**



A drain valve for sealing a conduit comprising a resilient boot including a sealing surface for biasing an actuator and the sealing surface away from a second sealing surface. The actuator is held in a sealing position by a latch and is released by disengaging pressure on the actuator releasing the latch and allowing the resilient boot to return the actuator to its non-sealing position.

3,771,178

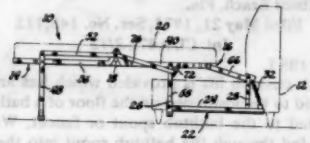
REMOVABLE LINKAGE FOR A FOLDABLE BED

Harold W. Inman, Birmingham, Mich., assignor to Lear Siegler, Inc., Detroit, Mich.

Filed June 22, 1972, Ser. No. 265,412

Int. Cl. A47c *17/04*, *17/14*

U.S. Cl. 5—13 **12 Claims**



A foldable sofa-bed assembly including first and second frame means, a base means adapted for connection to a support, such as a wooden frame of a piece of furniture, and linkage means for operatively interconnecting the frame means and the base means for moving the frame means relative to each other and relative to the base means between a folded sofa forming position and an open bed forming position. The linkage means includes a plurality of pivotally interconnected links pivotally connected to the base means and operable for movement between the sofa and bed forming positions independently of being connected to either of the frame means. In other words, the linkage means which is connected to the base means is adapted for connection to the two frame means and is operable for movement between the sofa and bed forming positions without being connected to the first and second frame means. Thus, the entire assembly may be shipped without being connected together yet the linkage means is easily attached to the frame means.

3,771,179

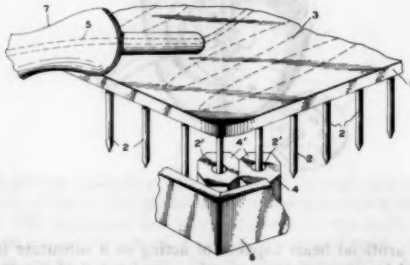
HONEY-EXTRACTING METHOD

Lydia Phippen Ogilby, 306 Washington St., Belmont, Mass.

Division of Ser. No. 839,409, July 7, 1969, Pat. No. 3,619,829. This application Oct. 15, 1971, Ser. No. 189,494

Int. Cl. A01k *59/02*

U.S. Cl. 6—12 A **3 Claims**



This disclosure involves the extraction of honey from wax-capped honey-filled honeycombs and the like with the aid of electrically heated probes and flat surfaces that automatically and rapidly remove the cap to expose the honey within the honeycomb cells.

3,771,180

COLLAPSIBLE PORTABLE BOAT AND ITS METHOD OF ASSEMBLY

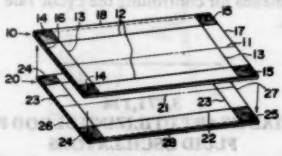
Daisuke Tanabe, 27, Daikyo cho, Shinjuku ku, Tokyo, Japan

Filed Sept. 8, 1971, Ser. No. 178,741

Claims priority, application Japan, Feb. 15, 1971, 46/6362

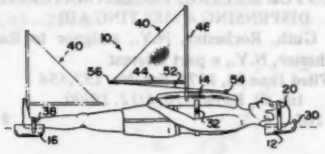
Int. Cl. B63b *5/24*, *7/04*

U.S. Cl. 9—2 R **10 Claims**



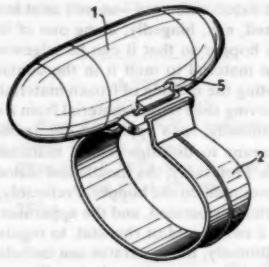
A light weight, high buoyancy boat is presented which may be collapsed into a compact body and which is made of corrugated thermo-plastic synthetic resin sheets and method of assembly thereof.

3,771,181
BODY SAIL
Raymond C. Dansereau, 130-58th Ave., St. Petersburg, Fla.
Filed Aug. 19, 1971, Ser. No. 173,000
Int. Cl. B63c 9/10
U.S. Cl. 9—329 **3 Claims**



A floating device comprising a plurality of floats removably attachable to various, predetermined positions of the body such as the head, torso and feet wherein each float includes a portion specifically configured to engage, in supporting relation the specific area of the body to which it is attached. A sail and mast structure serves as a propelling means for the device and is removably attachable to each of the floats individually.

3,771,182
DEVICES FOR TEACHING PUPILS THE ART OF SWIMMING
Roland Ingemar Lind, Odonvagen 10, Atvidaberg, Sweden
Filed Dec. 17, 1971, Ser. No. 209,270
Int. Cl. B63c 9/16
U.S. Cl. 9—337 **2 Claims**

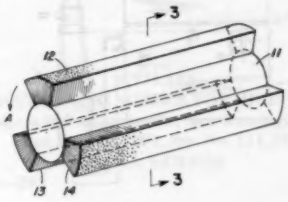


A swimming belt comprising a resilient band having a float attached to each end thereof. Each float includes a projecting yoke in which a bent portion at the end of the band is received. The bent portion has a terminal shoulder and a projection adjacent the shoulder and the bent portion extends through the yoke to lie against the outer periphery of the float such that the shoulder is received in an external groove adjacent the yoke while the projection is fitted in the yoke. The band includes a reinforcement therein between its ends in spaced relation from the floats.

3,771,183
LIFE PRESERVER
Harold J. Moran, Trenton, N.J., assignor to Switlik Parachute Company, Trenton, N.J.
Filed Mar. 22, 1972, Ser. No. 236,950
Int. Cl. B63c 9/12
U.S. Cl. 9—342 **7 Claims**

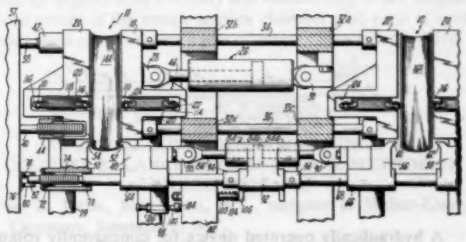
A life preserver of the inflatable type having a vest-like outer garment formed with collar and body pockets in which a pair of inflatable flotation cells are housed in a normally collapsed and folded condition. The cells are identical but opposite, each including a collar lobe and a body lobe connected in free communication. The collar and body lobes of each flotation cell are diagonally opposed, that is, the left collar lobe communicates with the right body lobe, while the right collar lobe communicates with the left body lobe. Each flotation cell is out of communication with and is inflatable separately and independently from the other flotation cell, so that in the event one cell does not inflate properly, there will be a built-in safety factor in that the other cell will alone support the user, keeping him in a balanced condition in the water in view of the diagonally opposed relationship of the collar and body lobes of the inflated cell.

3,771,184
PRINTING APPARATUS
Howard D. Ring, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 30, 1971, Ser. No. 214,300
Int. Cl. G01d 15/12
U.S. Cl. 101—1 **13 Claims**



Printing apparatus is disclosed in accordance with the teachings of the present invention wherein a plurality of applicators capable of retaining electrostatic developer particles are mounted in spaced relationship on movable support means such that said applicators sequentially contact an electrostatic latent image to deposit said electrostatic developer particles thereon. In one embodiment of the present invention the movable support means comprises a transparent rotatable cylinder. In another embodiment of this invention the movable support means comprises an endless belt movable about a plurality of cylinder means.

3,771,185
PRESSER PLATE, CONVEYOR MECHANISM AND CREASING IRON ARRANGEMENT FOR BOOK PRESSING MACHINE
James Thorp, and Uwe Jessen, both of West Hartford, Conn., assignors to August Kolbus, Westphalia, Germany
Filed Sept. 25, 1972, Ser. No. 291,664
Int. Cl. B42c 19/00
U.S. Cl. 11—1 CP **18 Claims**



An improved presser plate conveyor mechanism and creaser iron arrangement for a book pressing machine is presented for a dual channel or tandem machine. The chan-

nels of the machine operate in a staggered relationship with double acting pistons employed to operate the presser plates and creasing irons at corresponding stations in the dual channels. Resilient faced grippers on a conveyor chain grip the books on each side in a plane about two inches above the spine to thereby keep the book covers closed at all times and provide balance when moving the books between stations in the book pressing machine.

3,771,186

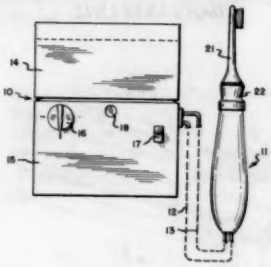
HYDRAULICALLY OPERATED HAND APPLIANCE FOR PERSONAL HYGIENE

Michel A. Moret, and Pierre J. Jousson, both of Geneva, Switzerland, assignors to Etablissements SOPHINDAR, Vaduz, Liechtenstein

Continuation of Ser. No. 117,466, Feb. 22, 1971, abandoned. This application Apr. 17, 1972, Ser. No. 244,879

Int. Cl. A46b *13/06*

U.S. Cl. 15—22 R **17 Claims**



A unitary hand appliance, driven by a source of liquid pressure pulses, alternatively oscillates an appliance head such as a toothbrush head or supplies liquid pressure pulses to an appliance head such as a water jet head. The appliance is controlled for either type of operation by a manually operated control ring at the front end thereof which controls valve means toward the rear of the appliance. Advantageously a two-tube recirculating appliance is employed, and the control means is designed so that the appliance can also be turned on and off by the front control ring. The control mechanism and appliance heads may be designed to insure proper positioning of the control ring for each type of appliance head.

3,771,187

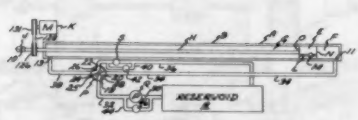
NON-CLOGGING TUBE CLEANING DEVICE

Lester L. Dillinger, 218 Fourth St., Seal Beach, Calif.

Filed Aug. 4, 1972, Ser. No. 277,981

Int. Cl. B08b *9/02*

U.S. Cl. 15—104.1 R **7 Claims**



A hydraulically operated device for concurrently rotating and longitudinally moving an apertured cutting member through a tubular member to remove and flush viscous material from the interior thereof. The flush water discharges from the apertures at a first pressure that is greater than the second pressure exerted by the cutting member on the viscous material as the latter is removed from the tubular member, and as a result the viscous material has no tendency to enter the apertures and plug the latter.

3,771,188

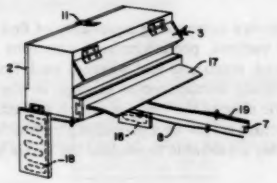
APPARATUS FOR MELTING FROZEN MATERIAL AND DISPENSING A MELTING AID

Raymond J. Guth, Rochester, N.Y., assignor to Robert T. Shaw, Rochester, N.Y., a part interest

Filed June 28, 1971, Ser. No. 157,454

Int. Cl. E01h *5/10, 5/12, 10/00*

U.S. Cl. 15—105 **8 Claims**



Apparatus including a hopper—itself including a bottom wall, side walls intersecting or merging with each other and with the bottom wall and an openable (i.e., removable or able to open by pivoting about a hinge or the like) top cover substantially contiguous to the side walls, the bottom wall having therein a dispensing means (e.g., a regulatable opening) adapted to conduct the hopper's contents (a melting aid, for example) to the exterior thereof—as well as at least one heating plate attached, e.g., hingedly, along one of its edges to a side wall of the hopper so that it can be edgewise contacted against a frozen material to melt it in the contact region, is useful in promoting the melting of frozen material, ice, for example, and removing such frozen material from a surface such as a roof. Additionally, such apparatus can include a handle means and a means to dislodge frozen material, such as a blade or a brush. Preferably, the handle and dislodging means are removably mounted on the hopper. Preferably, the heating plates are electrically operated, and the apparatus can include means, such as a switch and or rheostat, to regulate the heating plates. Additionally, the apparatus can include a means to regulate the dispensing means from the handle.

3,771,189

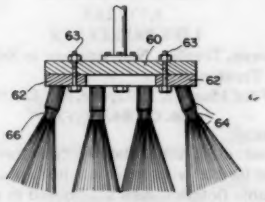
BRUSH BRISTLE REINFORCEMENT

John P. Horton; Avihu Kagen, and Troy S. Sulser, all of Kenilworth, N.J., assignor to Danline Manufacturing Company, Kenilworth, N.J.

Filed Aug. 27, 1971, Ser. No. 175,435

Int. Cl. A46b *13/02, 3/02*

U.S. Cl. 15—179 **6 Claims**



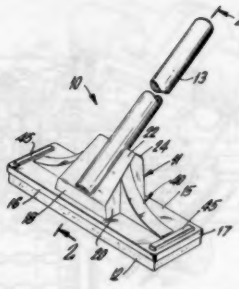
Rotary brush bristles are locked together at intermediate portions by welding bristles together. The welds deteriorate with vibrations as the bristles wear to provide uniform bristle stiffness. Thin flexible, long-wearing bristles are stiffened to enhance their sweeping qualities.

3,771,190

APPLICATOR

Steven L. Tischler, Whitestone, and James D. Dowdell, Haverstraw, both of N.Y., assignors to Empire Brushes, Inc., Port Chester, N.Y.

Filed Sept. 15, 1971, Ser. No. 180,742
Int. Cl. A47l 13/16
U.S. Cl. 15—244 R 9 Claims



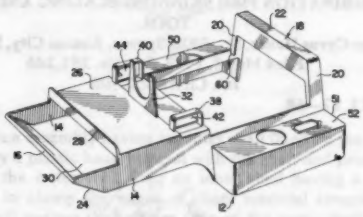
This applicator for waxing floors and like uses, comprises a one piece vacuum formed resilient plastic top to the underside of which a foam pad is adhered. This top has a groove into which one end of the handle easily snaps. The groove is somewhat greater than semi-circular in transverse angular extent and the groove is of somewhat less diameter than the diameter of the handle, to firmly grip the handle to the top. The handle can be snapped out of the top for replacement or storage.

3,771,191

TOOL CADDY

Jay M. Cain, East Aurora, N.Y., assignor to The Hoover Company, North Canton, Ohio

Filed July 3, 1972, Ser. No. 268,604
Int. Cl. A47l 9/00
U.S. Cl. 15—257 A 6 Claims



A tool caddy attachment for an elongated tank-type suction cleaner is provided to carry tools commonly used by an operator of the suction cleaner. The tool caddy is adapted to be supported by the suction cleaner when the suction cleaner is in its horizontal operating position, and also when it is in its upright or storage position. The tool caddy is also capable of standing in an upright position independent of attachment with the cleaner.

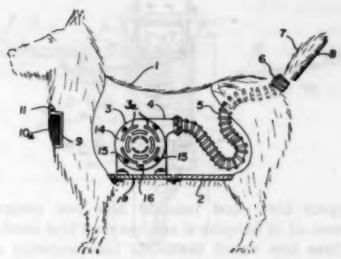
3,771,192

COMBINATION TOY DOG AND VACUUM CLEANER

Anne Margaret Zaleski, 314-57th St., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 8,963, Feb. 5, 1970, abandoned. This application Mar. 16, 1972, Ser. No. 235,290
Int. Cl. A47l 5/12
U.S. Cl. 15—330 5 Claims

A toy dog closely resembling a real dog and having a hollow interior in which is mounted a vacuum cleaner having a suction hose which is retractable from the tail end of the dog. This enables vacuuming a dog after a hair cut and grooming without causing fear to the dog, inasmuch as the vacuum



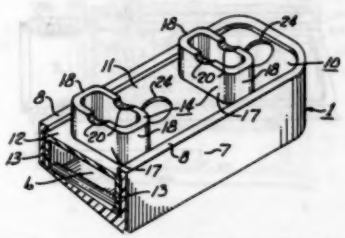
cleaner noise is greatly muffed by such enclosure. The vacuum cleaner is convertible to a blower and air issuing from the tail end can be heated so as to serve as a dryer.

3,771,193

SUCTION CLEANING NOZZLE FOR HIGH PILE RUGS

Neal Hageal, c/o 800 Anderson St., New Kensington, Pa.

Filed Dec. 23, 1971, Ser. No. 211,298
Int. Cl. A47l 9/06
U.S. Cl. 15—397 5 Claims



A suction cleaning nozzle for high pile rugs having a longitudinal nozzle suction chamber enclosed at the bottom with a base having a plurality of aligned but spaced oblong tubular extensions. Apertures into the chamber may be provided between the tubular extensions.

The longitudinal extent of the oblong tubular extensions may be aligned both normally and transversely to the longitudinal extent of the nozzle suction chamber with each of such extensions provided with a pair of cutouts at its extended end.

3,771,194

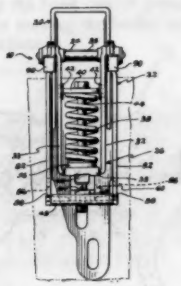
IMPROVED COVER MOUNTING HINGE AND COUNTER BALANCE MECHANISM AND METHOD OF MOUNTING SAME

Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Nov. 18, 1971, Ser. No. 200,029
Int. Cl. E05f 1/12
U.S. Cl. 16—190 4 Claims

A cover mounting combination hinge and counterbalance mechanism for hingedly mounting a cover upon a cabinet for

vertical swinging movement between horizontally disposed closed and vertically disposed open positions, which features



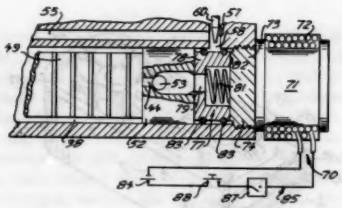
an arrangement for mounting the mechanism without requiring adjustments of the cover counter-balancing compression spring.

3,771,195

LATCHING AND RELEASE ASSEMBLY FOR HYDRAULICALLY RETARDED DOOR CLOSERS

Henry William Tansley, 305-1403 Beach Ave., Vancouver, British Columbia, Canada

Filed June 2, 1972, Ser. No. 259,050
Int. Cl. E05f *15/20*
U.S. Cl. 16—48.5 **4 Claims**



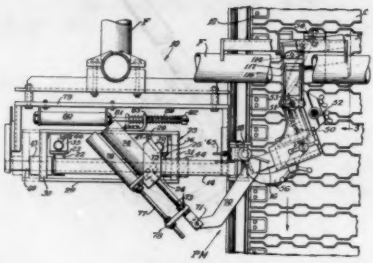
A door closer having an oil reservoir communicating with a tail end of a cylinder which is closed at its head end by a normally energized electromagent. A piston which is operably linked to a door to be closed is normally at the head end of the cylinder when the door is closed is moved against the action of a return spring towards the tail end of the cylinder when the door is opened so that the door under the action of the return spring is normally urged to a closed position. The piston has a fluid passage having a check valve which permits free flow of fluid from the reservoir into the cylinder head end. A restricted fluid return passage ported at one end through the wall of the cylinder at the cylinder head end and communicating with the reservoir permits unrestricted flow of fluid from the cylinder to the reservoir when the door is swung to its closed position under the action of the return spring. A feromagnetic valve element slidable in th cylinder is moved by the piston, when the door is opened, to a locking position against the electromagnet and closing the fluid return passage. The electromagnet, which is normally energized, maintains the valve element in said locking position to hydraulically lock the piston against return movement under the action of the return spring so as to maintain the door open. A compression spring between the valve element and electromagnet moves the valve element to a release position to open the fluid return passage when the magnet is de-energized and thus enable the return spring to close the door.

3,771,196

LOIN KNIFE MECHANISM

Richard F. Doerfer, Waterloo; Homer N. Leymaster, Cedar Falls, and Richard R. Neebel, Waterloo, all of Iowa, assignors to Doerfer Corporation, Cedar Falls, Iowa

Filed Sept. 9, 1971, Ser. No. 178,913
Int. Cl. A22b *5/20*
U.S. Cl. 17—1 R **10 Claims**



An animal processing machine including a loin knife mechanism constructed and arranged so as to optimize the loin cut from the animal side. The animal side processing machine includes carriage means supporting a scribe saw and a U-shaped loin pull knife. The carriage means movement is controlled to manipulate the scribe saw and U-shaped loin pull knife to automatically cut the loin. In use, the carriage means is moved laterally of the conveyor to squeeze and bias the loin pull knife during operation to thereby provide a suitable cut of the fatback at the tail end of the animal side so as to optimize the loin cut from the animal side.

3,771,197

COMBINATION FISH SKINNING SCALING AND KNIFE TOOL

Walter Cyrus Heuer, Sr., 5928 Spruce, Kansas City, Mo.

Filed May 8, 1972, Ser. No. 251,246
Int. Cl. A22c *25/00*
U.S. Cl. 17—68 **1 Claim**

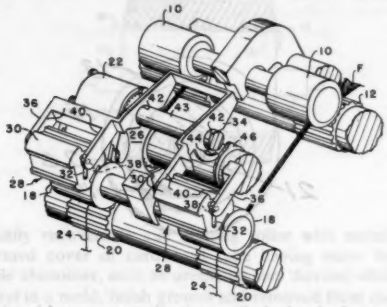
A hand manipulated device for cutting, skinning, and scaling fish. This device consists primarily of a pair of pivotable members with jaws, one of the jaws receiving a cutting blade or a scaling blade.

3,771,198

DRAFTING SYSTEM

Grady H. Sanders, 1586 Old Charlotte Rd., Spartanburg, S.C.

Filed Aug. 9, 1971, Ser. No. 170,189
Int. Cl. D01h *5/62*
U.S. Cl. 19—265 **10 Claims**



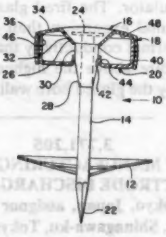
An intermittently actuated scraper member for one of the front rolls of a drafting system to scrape lint from such roll to prevent the accumulation of lint, trash, etc., thereon, thereby eliminating the cause of lap ups on such roll.

3,771,199

SHAFT-LOCKING-COVER-CLAMP BUTTON ASSEMBLY

Cletus Eldringhoff, 6219 Chinquapin Parkway, Baltimore, Md.

Filed May 24, 1972, Ser. No. 256,475
Int. Cl. A44b *1/12*
U.S. Cl. 24—113 R **8 Claims**



A button assembly having an outer shell fixed on the end of a shaft by a plastic head integral with the shaft and protrusive through the outer shell, and an inner shell having a flange adapted to clamp the edges of sheet material covering the outer shell against the interior face of the outer shell under clamping pressure maintained by force fit of a flanged perforation in the inner shell on a uniform-section portion of the plastic head; special shapes of the parts and a double-locking provision are also disclosed.

3,771,200

PUSH-IN FASTENER

Fritz Hoch, Pforzheim, Germany, assignor to Gutos Metallschliessenfabrik Bader & Hoch K. G. Pforzheim, Germany

Filed July 13, 1972, Ser. No. 271,553
Claims priority, application Germany, June 2, 1972, G 72 20 752.4
Int. Cl. A44b *19/00*
U.S. Cl. 24—230 A **6 Claims**

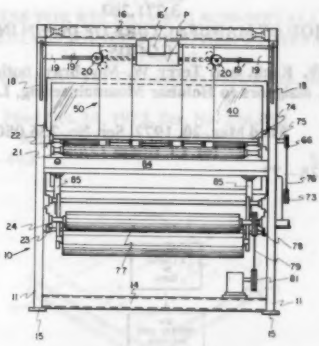
An abutment frame is rigid with a fastener box. A pivoted frame has forward and rear members. Said rear member forms a pivot, which extends through said fastener box. Said pivoted frame is pivotally movable to a locking position, in which said forward member bears on said abutment frame. Spring means are provided, which are adapted to resiliently hold said pivoted frame in said locking position. A fastener tongue extends between said abutment frame and said forward member and into said fastener box and has on the side facing said pivoted frame a projection, which is locked between said forward member and said fastener box. Said tongue when removed from said fastener box is adapted to be inserted into the same between said abutment frame and said forward member until said projection snaps in between said forward member and said fastener box.

3,771,201

TUBULAR FABRIC INSPECTION MACHINE

Donald K. Christian, Spartanburg, and Joseph R. Lovin, Greer, both of S.C., assignors to Rodney Hunt Company, Orange, Mass.

Filed Mar. 8, 1971, Ser. No. 121,792
Int. Cl. D06h *3/16*
U.S. Cl. 26—70 **10 Claims**



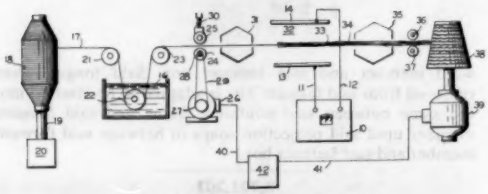
A machine for the inspection or handling of textile materials, especially tubular knit goods, is disclosed. The present machine comprises a frame on which a floating panel is received. Textile material to be inspected or otherwise treated passes around the floating panel. Electrical actuatable means such as lights, heat elements or the like are positioned within the floating panel and are actuated by an electrical supply means positioned outside the panel so as to permit tubular goods to pass unobstructed therearound. Roll guides positioned on the frame and panel receive textile material therebetween to properly present the textile material to the panel and to maintain floatation of the panel. The electrical supply means for actuation of the electrical means within the panel is preferably an air gap transformer with the primary winding thereof positioned apart from the panel and the secondary winding thereof positioned within the panel. Textile material supply means and take up means may also be provided with the inspection machine. The supply means is mounted for free rotation on the back side of the frame. The take up means comprises a roll received on a pivotally mounted arm assembly with the roll or the fabric thereon being in driven contact with a driving roll. Air cylinders are associated with the arm assembly so as to maintain constant contact between the driving roll and the take up roll to create a package of constant density.

3,771,202

METHOD FOR ELECTROSTATIC YARN BULKING AND IMPREGNATING

Mayer Mayer, Jr., New Orleans, and Albert Baril, Jr., Metairie, both of La., assignors to the United States of America as represented by the Department of Agriculture, Washington, D.C.

Division of Ser. No. 129,735, March 31, 1971, Pat. No. 3,707,024. This application Sept. 29, 1972, Ser. No. 293,748
Int. Cl. D02g *1/00*; D02j *1/20*; D06m *13/00*
U.S. Cl. 28—75 WT 6 Claims



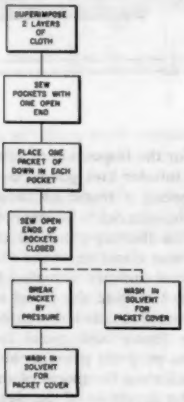
Chemical and physical methods and apparatuses have been employed to impart permanently bulked configuration to cellulosic and certain non-cellulosic yarns. This has been accomplished by passing the yarn through an electrostatic field either before or after impregnating the yarn with certain chemical crosslinking formulations.

3,771,203

METHOD OF MANUFACTURE OF DOWN INSULATED GOODS

James W. Kack, and Terry W. Mowbray, both of Boulder, Colo., assignors to Holubar Mountaineering, Ltd., Boulder, Colo.

Filed Mar. 20, 1972, Ser. No. 236,080
Int. Cl. D06m *17/00*
U.S. Cl. 28—77 10 Claims


SUPERIMPOSE 2 LAYERS OF CLOTH
SEW POCKETS WITH ONE OPEN END
PLACE ONE PACKET OF DOWN IN EACH POCKET
SEW OPEN ENDS OF POCKETS CLOSED
BREAK PACKET BY PRESSURE
WASH IN SOLVENT FOR PACKET COVER
WASH IN SOLVENT FOR PACKET COVER

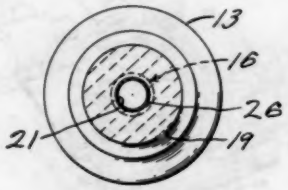
A method of manufacturing insulated goods with down filling, which comprises initially forming packets of a predetermined amount of down compressed into a predetermined size, which packets are placed in compartments for down in the goods. The compartments are completely closed for containing down, and the packet of down in each compartment is then ruptured by striking it, permitting the down to release into the compartment. Subsequent immersion of the down insulated goods in a solvent for the packet material dissolves such material leaving only down in the compartment.

3,771,204

SPARK PLUG

Frank A. Westenkirchner, Toledo, Ohio, and Paul E. Rempes, Jr., Royal Oak, Mich., assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Feb. 8, 1972, Ser. No. 224,456
Int. Cl. H01t *13/02*
U.S. Cl. 29—25.12 4 Claims



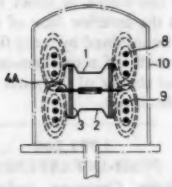
In a spark plug including an insulator mounted in a tubular shell and an electrode assembly mounted within a bore through the insulator and projecting from a nose portion of the insulator to define a spark gap with a ground electrode, a method for improving the resistance of the nose portion to cracking caused by thermal stresses. The electrode assembly includes a high heat conducting portion in close proximity with the wall of the portion of the bore extending through the nose portion of the insulator. The method comprises applying a coating of a glaze slip to the interior wall of the portion of the insulator bore which will be in proximity with the heat conducting portion of the electrode and then firing the glaze at a controlled time and temperature to form an uninterrupted glassy coating on at least the portion of the nose bore adjacent the end of the insulator. The fired glaze must have a lower coefficient of thermal expansion than the insulator, an appreciably lower thermal conductivity than the insulator and a softening temperature above the highest operating temperature encountered by the glazed bore wall.

3,771,205

METHOD OF MANUFACTURING A MULTIPLE-ELECTRODE DISCHARGE TUBE

Shigeru Furuta, Tokyo, Japan, assignor to Kabushiki Kaisha Sankosha, Osaka, Shinagawa-ku, Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 211,917
Claims priority, application Japan, Mar. 9, 1971, 46/12185
Int. Cl. H01j *9/18*, *21/10*, *1/88*
U.S. Cl. 29—25.16 3 Claims



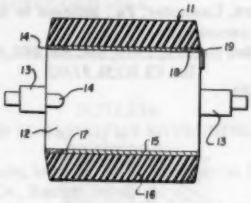
A multiple-electrode discharge tube comprises a plurality of disc electrodes arranged one above another and fused with the envelope therefor. Each of the odd-numbered electrodes has a reduced diameter and a reduced thickness as compared with the even-numbered electrodes. Fusion takes place by way of high frequency heating coils disposed around the electrodes of reduced thickness. This provides a uniform heating of all of the electrodes for fusion, and avoids partial overheating of the envelope.

3,771,206

CAN COATING ROLLER

James K. Brown, Arlington Heights, Ill., assignor to Samuel Bingham Company, Franklin Park, Ill.

Filed Aug. 11, 1972, Ser. No. 279,951
Int. Cl. B21b *31/08*
U.S. Cl. 29—129 **2 Claims**



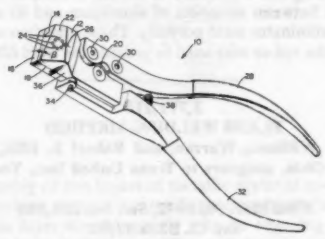
Readily recoverable can coating roller with metal core; preformed cover of cardboard tube having outer layer of suitable elastomer, such as urethane, cast thereon while on a mandrel in a mold, finish ground and removed from mandrel; and mechanical means for securing preformed cover to core, comprising peripherally disposed lugs at one end of core interengaged by corresponding notches in one end of cardboard tube, and a notch in other end of the tube engaged by clamp removably mounted on core.

3,771,207

STEPPED LENGTH LEAD LOCATOR AND TRIMMER

Lester L. Campbell, Anaheim, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 21, 1972, Ser. No. 282,524
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 H **4 Claims**



The leads of a TO–5 or other similar electronic component package are trimmed to a stepped length, chisel-ended configuration by means of a lead locator and trimmer tool having two pivoted dies having respective contraposed shearing surfaces intersected at an acute angle by parallel lead pilot holes. In one particular embodiment, handles attached to the dies cause these shearing surfaces to transversely pivot with respect to each other, whereby the trimming operation is performed.

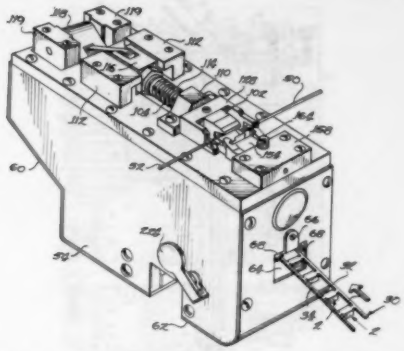
3,771,208

MACHINE FOR CRIMPING CONNECTORS TO WIRES AND CONNECTOR SUPPLY ARRANGEMENT

James F. Taylor, and James E. Golden, both of Franklin Park, Ill., assignors to Reliable Electric Company, Franklin Park, Ill.

Filed Mar. 13, 1972, Ser. No. 234,113
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D **19 Claims**

A machine is provided for crimping a U-shaped connector to a pair of conductor wires and wherein the connector is on a tape that carries a series of such connectors. The machine comprises an anvil for backing the tape and connector, a reciprocating ram, a wire-retaining guide carried by the ram for supporting the two wires in spaced apart relationship, and a shear block adjacent to the anvil and being movable relative to the anvil. The shear block has cutting edges cooperating with the ram for cutting the wires and has additional cutting edges cooperating with the anvil for cutting the tape. The ram



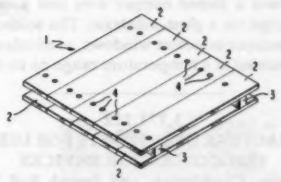
also has die surfaces cooperating with the anvil for crimping the connector. The ram is driven by a primary piston which is in lost-motion connection with a member that actuates a valve to operate a secondary piston for feeding the tape following the forward stroke of the primary piston.

3,771,209

PROCESS FOR RECLAIMING NON-METALLIC MATERIALS JOINED TOGETHER BY METAL FASTENERS

James H. Bennett, Jr., 151 Chesapeake Park Plaza, Baltimore, Md.

Filed Oct. 10, 1972, Ser. No. 296,095
Int. Cl. B23q *17/00*; B23p *19/00*
U.S. Cl. 29—403 **18 Claims**



A process for separating non-metallic materials joined together by a metallic fastener whereby sufficient heat is generated in the metal fastener to disintegrate a portion of the material adjacent the fastener so as to disjoin the metallic fastener from the material.

This disclosure is concerned with a process for separating non-metallic material joined together by a metallic fastener and, more particularly is concerned with a process for reclaiming wood from wooden structures which are assembled by use of metallic fasteners.

3,771,210

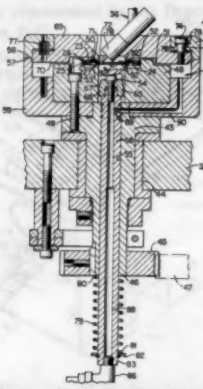
METHOD FOR WELDING BELLOWS CONSTRUCTIONS AND THE LIKE

Anthony T. Keller, Pequannock, N.J., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 17,172, March 6, 1970, Pat. No. 3,666,161. This application Mar. 20, 1972, Ser. No. 236,503
Int. Cl. B23p *19/04*
U.S. Cl. 29—454 **10 Claims**

Method and apparatus for welding together the internal diameters of two bellows members wherein the apparatus has a frame means carrying an indexible table having a fixture

thereon, the fixture being adapted to receive and hold the bellows members with the internal diameters thereof in a position for being welded together. The table is indexed to cause the fixture to move from a loading station thereof to a welding station thereof adjacent welding means carried by the frame means. Automatic means causes the welding together of the internal diameters of the bellows members with the welding means while the members are disposed at the welding station.



3,771,211

METHOD OF FABRICATING TRANSPARENT ELECTROCONDUCTIVE WINDOW

Dennis S. Postupack, Lower Burrell, Pa., assignor to PPG Industries Inc., Pittsburgh, Pa.

Division of Ser. No. 73,619, Sept. 18, 1970, Pat. No. 3,734,698
Filed Feb. 20, 1973, Ser. No. 333,592
Int. Cl. B23k *31/02*
U.S. Cl. 29—473.1 **2 Claims**

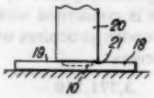
A tin-free alloy for use in making an electrical solder connection between a tinned copper wire and a ceramic silver conductive stripe on a glass substrate. The solder connection is useful in electroconductive windows, particularly laminated windows fabricated at a temperature range up to about 300°F.

3,771,212

MANUFACTURE OF SUPPORTS FOR USE WITH SEMICONDUCTOR DEVICES

Sydney Jackson, Chadderton, and Joseph Bell Titterington, Burnley, both of England, assignors to Ferranti Limited, Lancashire, England

Continuation of Ser. No. 27,478, April 13, 1970, abandoned. This application June 13, 1972, Ser. No. 262,176
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.3 **15 Claims**



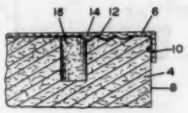
In manufacturing a support such as a lead frame for a semiconductor device, alloying material such as gold is selectively applied in sufficient thickness for the device bonding operation to a part only of a supporting member of the support, by impacting an initially spherical particles of the alloying material onto the selected part by an impacting tool, for example, forming a thermocompression bond, the particle being secured on the selected part either, when of sperhical shape, initially by slight impacting under a suction tool, or, after being flattened between a heated, polished surface of the impacting tool and a polished anvil, solely by the impacting tool.

3,771,213

METHOD OF FORMING AN EMBOSSED FOIL-COVERED CEILING PANEL

James S. Peraro, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 19, 1969, Ser. No. 886,533
Int. Cl. B23k *31/02*
U.S. Cl. 29—480 **1 Claim**



A conventional ceiling panel covered with a metal foil which is adhered to the edges of the panel. The foil is drawn tight across the face of the panel by lightly embossing the foil face to mechanically shrink the foil over the face of the panel.

3,771,214

ALUMINUM WELDING

Wayne W. Binger, New Kensington, and Richard K. Sager, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 392, Jan. 2, 1970. This application Dec. 8, 1971, Ser. No. 206,217
Int. Cl. B23k *1/20, 31/02*
U.S. Cl. 29—488 **19 Claims**

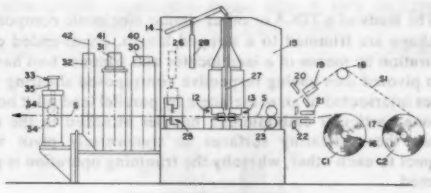
Introducing small amounts of cobalt, nickel, or iron into a weld joint between members of aluminum and its alloys substantially eliminates weld porosity. These additives may be included in the rod or wire used to provide the weld filler metal.

3,771,215

FLASH WELDING METHOD

Arthur L. Williams, Warren, and Robert S. Ellis, Canfield, both of Ohio, assignors to Wean United Inc., Youngstown, Ohio

Filed Mar. 30, 1972, Ser. No. 239,588
Int. Cl. B23k *31/02*
U.S. Cl. 29—482 **5 Claims**



Apparatus for and method of flash welding the trailing and leading ends of elongated metal strip, particularly where the strip is in coil form. The flash welder may be of standard construction with the exception that a shear is built into the welder and disposed downstream of the welding clamps, and a strip indexing means is disposed downstream of the shear. Strip from one coil is fed through the welder without obstruction. When the supply on this coil is near exhaustion, further movement of the strip is arrested and the shear is operated to sever the strip. The tail portion of the severed strip is withdrawn from the welder and when such portion clears the welding clamps, a gauge bar is disposed between the clamps

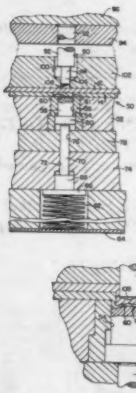
while the main portion of the severed strip is moved in an upstream direction by the indexing means so that its sheared end abuts against one side of the gauge bar. Strip from the other coil is fed into the welder until its leading end abuts the opposite side of the gauge bar. The welding clamps are then closed on the strips, the gauge bar is withdrawn, and a normal flash welding operation takes place.

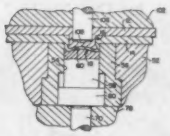
3,771,216

METHOD AND TOOLING FOR EXTRUDING A CLOSED END RIVET

Verner A. Johnson, Livonia, Mich., assignor to Johnson Die & Engineering Co., Detroit, Mich.

Filed Oct. 27, 1971, Ser. No. 193,075
Int. Cl. B21d *39/00*; B23p *11/00*
U.S. Cl. 29—509 **6 Claims**





An assembly of two layers of metallic material conjoined in a single machine operation extruding a closed end (blind hole) rivet in one layer simultaneously with an engaging socket in the second layer is disclosed. The extruded rivet is substantially in the form of a cup with a flanged bottom seated and secured within the socket recess of the second layer formed simultaneously therewith. The inventive tooling and process to form the assembly in a single machine operation is also disclosed.

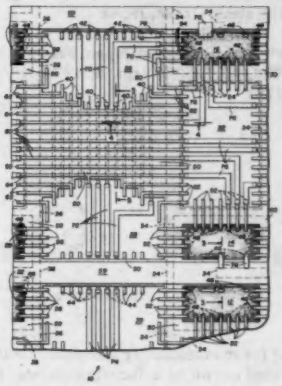
3,771,217

INTEGRATED CIRCUIT ARRAYS UTILIZING DISCRETIONARY WIRING AND METHOD OF FABRICATING SAME

Thomas Elton Hartman, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 765,870, Oct. 8, 1968, abandoned.
This application Apr. 16, 1971, Ser. No. 134,903
Int. Cl. B01j *17/00*
U.S. Cl. 29—574 **14 Claims**

A plurality of spaced apart integrated circuits formed on a semiconductor substrate are provided with metal terminals extending through an insulating layer. A multilayer network of conductive strips is formed between the integrated circuits upon a first area of the insulating layer. The integrated circuits and the conductive strips are tested for preferred electrical characteristics. In response to the results of the testing, a unique pattern of discretionary leads are formed over a second area of the insulating layer. The discretionary leads



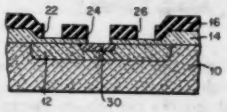
connect selected portions of the multilayer network and the terminals of the integrated circuits to form an integrated circuit array.

3,771,218

PROCESS FOR FABRICATING PASSIVATED TRANSISTORS

Jack L. Langdon, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 889,146, Dec. 30, 1969, abandoned.
This application July 13, 1972, Ser. No. 271,479
Int. Cl. B01j *17/00*; H01l *5/00*
U.S. Cl. 29—578 **7 Claims**



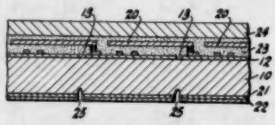
An integrated circuit technique for passivating transistors and, at the same time, providing that the passivating material serve as part of the diffusion mask so as to avoid mask alignment difficulties, particularly the difficulty encountered when the steps of diffusing impurities and forming contact holes are to be performed in a very restricted area.

The present technique involves the formation of a diffusion mask which is constituted of a film of a first material which is subject to ready etching by a first etchant but which is substantially unaffected by a second etchant; and of another, passivating, film which is constituted of a second material, the latter being subject to ready etching by the second etchant, but not by the first etchant. The first film is preferably made of silicon oxide (SiO_2). The second film is preferably constituted of silicon nitride (Si_3N_4); however, other materials can be used for passivation, such as aluminum oxide (Al_2O_3). Only one etching step is required to be performed on the passivating film, whereby both the emitter window or opening and the base region contact openings are formed together. As a consequence, the mask alignment difficulties normally attending separate etching steps are obviated.

3,771,219
METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

Takateru Tuzi; Katunobu Awane, both of Nara, and Mutuo Matunami, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 2, 1971, Ser. No. 111,912
Claims priority, application Japan, Feb. 5, 1970, 45/10124; Aug. 19, 1970, 45/72508; Sept. 1, 1970, 45/76919; Oct. 5, 1970, 45/87291
Int. Cl. B01j 17/00
U.S. Cl. 29—583 10 Claims

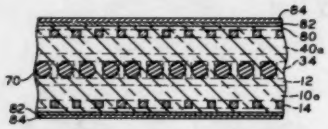


A method for manufacturing a semiconductor device such as an integrated circuit or a discrete transistor includes a step of forming beam-leads to permit chips to be face-up bonded to a substrate, the beam-leads in a certain chip expanding to the neighboring chip across the boundary between said two chips.

3,771,220
METHOD OF MAKING A PLATED WIRE ARRAY

Joseph A. Shannon, Akron; Anthony M. Apicella, Massillon, and John T. Franks, Jr., Tallmadge, all of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed May 5, 1972, Ser. No. 250,708
Int. Cl. H01f 7/06
U.S. Cl. 29—604 4 Claims



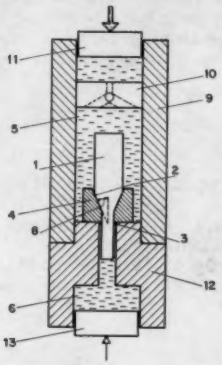
The purpose of the invention is to produce a plated wire array mat which is simpler to fabricate, permits higher packing densities, and reduces the required strap drive currents over the present array mat techniques. The structure permits the positioning of ferrite keeper material in closely adjacent and fully surrounded relationship to the plated wire so as to minimize straying magnetic fields, thereby allowing higher packing densities and lower drive currents to be used. The fabrication technique utilizes highly precise photographic techniques to build a simple tunnel structure array utilizing photolithic layers, exposure, and wash thereof to achieve the desired structural relationship.

3,771,221
METHOD AND APPARATUS FOR PRODUCING FINE-PARTICLE PERMANENT MAGNETS

Kurt Bachmann, Nussbaumen, Switzerland; Franz Hofer, Veldhoven, Netherlands, and Claus Schuler, Widen AG, Switzerland, assignors to Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Dec. 3, 1971, Ser. No. 204,581
Int. Cl. H01f 7/06, 3/08
U.S. Cl. 29—608 15 Claims

Fine-particle permanent magnets are prepared by hydrostatically driving a pre-pressed member composed of powder of magnetically aligned particles through a die opening of diminishing cross-section, so as to cause compression of the pre-pressed member into a permanent magnet form wherein

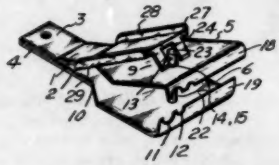


the hydrostatic force is supplied by a surrounding liquid medium under a compressive force.

3,771,222
APPARATUS FOR CUTTING AND CORE-STRIPPING AN ELECTRIC CORD

Yuuko Sakuma, 10-9 Kiribatake, Kanagawa-ku, Yokohama, Japan

Filed Dec. 9, 1971, Ser. No. 206,265
Claims priority, application Japan, Sept. 11, 1971, 46/70783
Int. Cl. H02g 1/12
U.S. Cl. 30—90.1 1 Claim



An apparatus for the cutting and core-stripping of an electric cord comprising a cutter having circular openings formed in the contact portions of its cutting edges to cut cords. The openings are provided with cutting edges to strip the cords and take out inner core. A bevel head rivet functions as a fulcrum of a lever that is placed near the center of the transverse width of upper and lower leaf springs. Both springs are cut to form T - shaped or I - shaped cutters.

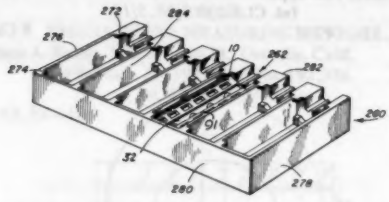
3,771,223
BONDED BLADE CARTRIDGES AND A CARTRIDGE DISPENSING SYSTEM

Jan Dawidowicz, Fairfield, and Frank A. Ferraro, Trumbull, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. Nos. 191,665, Oct. 22, 1971, and Ser. No. 236,723, March 21, 1972. This application June 1, 1972, Ser. No. 258,682
Int. Cl. B26b 21/22; B65d 85/54
U.S. Cl. 30—40 12 Claims

The specific disclosure provides a dispensing system for bonded double edge razor blade cartridges comprising a dispenser, a plurality of disposable double edge cartridges in the dispenser, and a cartridge holder. Each of the cartridges has a plurality of double edge blades, and a T-shaped channel

formed transversely thereof. The holder has a plurality of supporting surfaces formed transversely thereof for sliding engagement with the T-shaped channel. The dispenser has a plu-



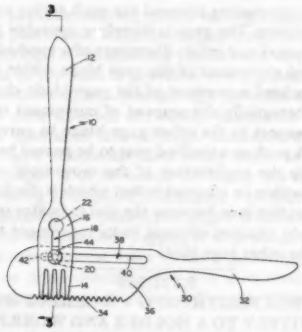
rality of guide surfaces for aligning the supporting surfaces of the holder with a T-shaped channel of at least one of the cartridges.

3,771,224

JUVENILE TRAINING KNIFE AND FORK

Thomas F. Bono, Jr., 11 Meeting House Lane, South Easton, Mass.

Filed Feb. 3, 1972, Ser. No. 223,268
Int. Cl. A47j *43/28*
U.S. Cl. 30—148 **9 Claims**



A knife and fork each slotted in the direction of elongation, a slide member with enlarged ends in the knife slot, and the end of the fork slot enlarged relative to the remainder thereof for disengageably receiving one of said slide member enlarged ends.

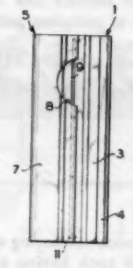
3,771,225

SCRAPER

Henry Morton Unger, No. 16, Walter-Dodde Strabe, Solingen, Germany

Filed Nov. 18, 1971, Ser. No. 199,999
Claims priority, application Germany, Nov. 23, 1970, G 70 43 159.3
Int. Cl. B26b *3/00*
U.S. Cl. 30—155 **10 Claims**

A scraper comprises a blade holder, a lamelliform blade and a cover member. The blade holder has a holding edge and includes two arms that are resiliently disposed with respect to each other along a cutting edge. The blade is removably held between the resiliently disposed arms of the blade holder along the cutting edge thereof. The cover member has a substantially U-shaped cross-section with free longitudinal edges and is capable of being pushed over the cutting edge of the blade holder when the scraper is not in use and over the holding edge of the blade holder to enlarge the area of the scraper to be gripped during use. Guide means is located on the blade holder and the cover member for guiding movement of the cover member with respect to the blade holder between a first position over the cutting edge and a second position over the holding edge. The guide means includes means for pivoting



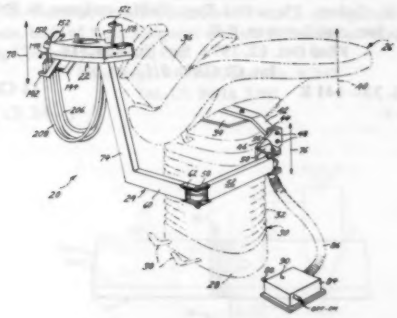
the blade holder with respect to the cover member and linear guide means extending along the length of the scraper to locations short of the respective ends of the scraper.

3,771,226

WATER FLUSH CUSPIDOR

Nathaniel H. Lieb, Narberth, and Samuel Scott Caley, Elverson, both of Pa., assignors to Syndent Corporation, West Conshohocken, Pa.

Filed July 23, 1971, Ser. No. 165,617
Int. Cl. A61c *19/02*
U.S. Cl. 32—22 **10 Claims**



A water flush cuspidor adapted for use with a dental chair that is vertically movable. The water flush cuspidor is mounted on the seat plate by hinged arms. The cuspidor is rotatable from the left side to the right side of the dental chair, rendering the chair usable by both left-handed and right-handed dentists. Additionally, the cuspidor is movable longitudinally relative to the chair. As the chair is raised, the cuspidor will be raised therewith, thereby placing the cuspidor at the proper height for patient use at all times without further adjustment.

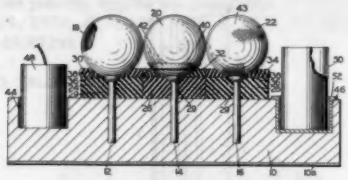
ERRATUM

For Class 30—43.92 see:
Patent No. 3,771,842

3,771,227
DENTAL CARE DEMONSTRATION DEVICE

La Donna Jeanne Black, P. O. Box 3375, Portland, Oreg.

Filed June 19, 1972, Ser. No. 264,076
Int. Cl. A61c 19/00
U.S. Cl. 32—71 10 Claims

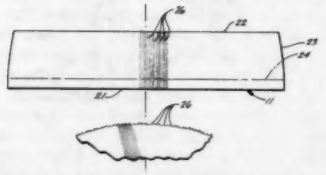


A demonstration device employing a base on which is supported three pedestals each having a ball-like enlargement thereon. Supported on the base around each of the pedestals is a resilient pad which represents gum areas of the mouth, and mounted on the pedestals between the resilient pads and the enlargements are resilient layers or discs of material which at one enlargement represent an unattached gum portion at a tooth and at the other two enlargements represent a foreign substance which has gathered on the tooth such as plaque. One of the enlargements is provided with a band having a roughened surface at about the upper termination of the layer of resilient material for demonstrating the accumulation of tartar. The layer of material which is used to demonstrate the unattached gum portion is of different color than the other two layers of material. One of the enlargements has a roughened surface of a structure arranged to simulate in sound the sound of a clean tooth when rubbed with unwaxed dental floss.

3,771,228
FRICTION WHEEL MEASURING DEVICE

Irven H. Culver, Playa Del Rey, Calif., assignor to Primus Mfg., Inc., San Lorenzo, P.R.

Filed Oct. 12, 1971, Ser. No. 188,314
Int. Cl. G01b 3/12
U.S. Cl. 33—141 R 12 Claims

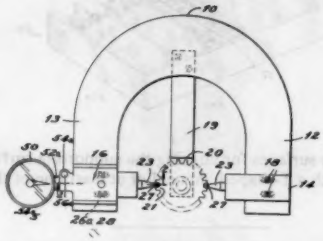


A distance measuring device having a variable radius frictionally driven measuring wheel is described. The repeatability of measurements made by the measuring device is improved by providing a plurality of randomly spaced apart ridges on the periphery of the measuring wheel with the long axis of the ridges extending transverse to the circumference of the wheel. Accuracy of measurement is assured by an adjusting method wherein the wheel is disengaged from the measurement surface during adjustment and the wheel moved to prevent it from following in a track previously made in the measurement surface.

3,771,229
DOUBLE ACTING GAGE

Jan Reef, 41520 Eight Mile Rd., Northville, Mich.

Continuation-in-part of Ser. No. 11,273, Feb. 13, 1970, abandoned. This application Feb. 18, 1971, Ser. No. 116,511
Int. Cl. G01b 5/08, 5/16
U.S. Cl. 33—147 M 8 Claims

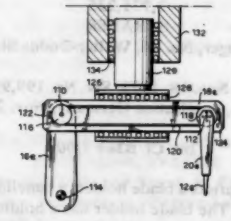


This disclosure relates to a double acting gage wherein there are two gage blade assemblies mounted in opposed spaced apart relationship on a supporting base, as for example one on the outer ends of each of the two arms of a horseshoe shaped frame. There are two separate modifications shown. In one modification the gage blade is spring urged toward the gage blade of the other gage blade assembly and so is the blade supporting channel thereof. In the other modification the gage blade and its supporting channel are each spring urged in the opposite direction. The gage is therefore operable to measure outside diameters and inside diameters of a toothed ring gear. The permitted movement of the gage blade within its channel plus the permitted movement of the gage blade channel itself increases substantially the amount of movement of one gage blade with respect to the other gage blade to permit a larger piece of work such as a toothed gear to be passed between said blades. While the registration of the movement of the gage blade along within its channel is that which is disclosed on the dial indicator, this is so because the dial indicator is carried by the gage blade channel element in its movement toward and away from the other gage blade.

3,771,230
DEVICE FOR POSITIONING A WORKING MEMBER RELATIVELY TO A HOLDER AND WORKPIECE

Franco Sartorio, Turin, Italy, assignor to D.E.A. Digital Electronic Automation S.P.A., Turin, Italy

Filed June 3, 1971, Ser. No. 149,496
Claims priority, application Italy, July 29, 1970, 69616 A/70
Int. Cl. B23q 9/00; F16h 21/00
U.S. Cl. 33—185 R 8 Claims



A working member such as a feeler or making instrument is held by an articulated device that is gripped by a holder, the device being movable to reposition the working member relatively to a workpiece and a holder without the need to reposition the holder or detach the working member. The working member remains in a single plane throughout such repositioning. The device comprises three arms articulated to each other by two parallel pivots, the first arm being articulated to the holder by a pivot parallel to those connecting the arms. The

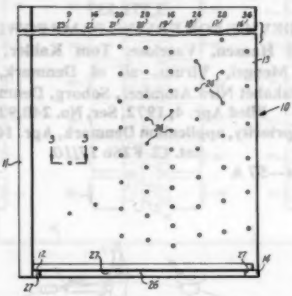
working member is connected to the free end of the third arm. Means is provided to keep the first and third arms parallel to each other at all times.

3,771,231

VISUAL PAPER MEASURING DEVICE

William A. Kemp, 2322 Lincoln St., Oroville, Calif.

Filed Oct. 21, 1971, Ser. No. 191,376
Int. Cl. G01b 3/00
U.S. Cl. 33—189 1 Claim



A visual paper measuring device having a paper supporting base and a pair of side walls meeting at a right angle. The side walls are formed of transparent plastic such as plexiglass and at least one of the walls is provided with a plurality of rows of conical apertures which open through the walls with the larger end of the cone directed outwardly. Indicia on the walls adjacent the apertures therethrough indicates the weight of paper and type of measurement being made. In the situation where the paper is to be boxed for office use holes are provided indicating 250 sheets, 500 sheets, 750 sheets, and 1,000 sheets. Measuring the quantity of paper is handled by placing the paper on the base and jogging it to produce a flat surface against the meeting side walls. A sharp pencil point, ballpoint pen point or other marking device is then used to mark the points of separation of the stack following which the paper is packaged.

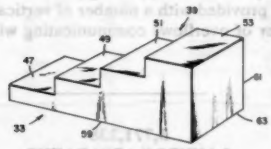
When it is desired to pad the paper it is marked through a set of holes indicating 100 sheet divisions. After the paper is separated it is placed in a padding device and padded.

3,771,232

TRAILER LEVELING SYSTEM

Walter A. Specht, 124 Stanford Ln., Seal Beach, Calif.

Filed June 23, 1971, Ser. No. 155,753
Int. Cl. G01c 9/00
U.S. Cl. 33—375 3 Claims



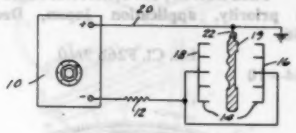
A system for leveling the transverse axis of a trailer by determining in advance the number of a set of standard size blocks to be positioned under the trailer's lowest wheel in order to raise that side of the trailer the required amount; the system including an elongated level sensing device supported at one of its ends by a normally horizontal transverse surface and at its other end by a graduated surface on a leveling gauge which in turn is also supported by the transverse surface, the position of the graduated surface of the level-sensing device when the device indicates that it is level determining the number of standard blocks to be used.

3,771,233

ELECTROSTATIC ENHANCEMENT OF EVAPORATION

Park French, Aurora, and Thomas Squire Piwonka, North Canton, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Jan. 14, 1972, Ser. No. 217,759
Int. Cl. F26b 3/34
U.S. Cl. 34—1 7 Claims



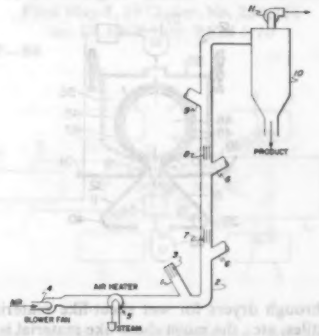
By applying high voltage D.C. discharge to a liquid or solid mass containing liquid, the surface of which is in contact with a circulating gaseous atmosphere such as air, evaporation of the liquid is promoted, due to turbulence of the atmosphere brought about by the discharge adjacent the surface of the body from which the liquid is evaporated. This phenomenon is particularly useful in removing moisture from irregular shaped bodies such as investment casting shell molds which require uniform drying in order to improve strength and mitigate cracking. Drying rate is increased without the attendant disadvantages experienced when attempts are made to increase drying rates using conventional drying techniques such as oven and tunnel drying.

3,771,234

MICROWAVE DRYING PROCESS FOR SYNTHETIC POLYMERS

Eric O. Forster, Scotch Plains, and Peter J. Creighton, Mendham, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Sept. 9, 1969, Ser. No. 9,247
Int. Cl. B01k 5/00
U.S. Cl. 34—1 4 Claims



Volatile polar vehicles such as water or organic solvents, are removed from nonpolar materials by passing said material through at least one pneumatic conveyor resonating cavity operating at a microwave frequency of about 600 to about 50,000 MHZ. For example, a polymer such as polyvinyl chloride may be dried by conveying the polymer through said pneumatic conveyor operating at a frequency of 915 MHZ for a time sufficient to reduce the volatiles content to about 5 wt.

percent and subsequently conveying the partially dried material through a second pneumatic conveyor resonating cavity operating at a microwave frequency of 2,450 MHZ for a time sufficient to reduce the polar vehicle content to below 0.5 wt. percent.

3,771,235

METHOD FOR FLOATING AND DRYING A WEB

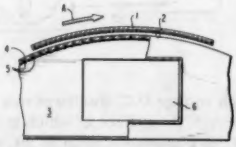
Minoru Minoda; Tetsuo Yoshida, and Hiroshi Chikamasa, all of Minami Ashigara-Machi, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara-shi, Kanagawa, Japan

Filed Dec. 29, 1971, Ser. No. 213,677

Claims priority, application Japan, Dec. 29, 1970, 45/121446

Int. Cl. F26b *3/10*

U.S. Cl. 34—10 **2 Claims**



A method and apparatus for floating and drying a flexible web having a coated layer thereon, which employs an air-impinging device comprised of a plate having a plurality of slots or small holes therethrough and communicated with a plenum chamber supplied with air from an air source. The dimensions of the slots in the plate are defined according to predetermined values so that the drying effect of the air impinging on the coated web is maximized.

3,771,236

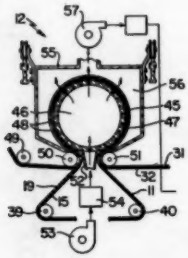
METHOD AND APPARATUS FOR TREATING SHEET-LIKE MATERIAL WITH FLUID

Robert R. Candor, 5940 Munger Rd., Dayton, Ohio, and James T. Candor, 5440 Cynthia Ln., Dayton, Ohio

Continuation-in-part of Ser. No. 105,894, Jan. 12, 1971, Pat. No. 3,699,663. This application July 29, 1971, Ser. No. 167,206

Int. Cl. F26b *5/05*

U.S. Cl. 34—16 **44 Claims**



In air-through dryers for wet sheet-like material, such as paper, textiles, etc., the moist sheet-like material is passed adjacent a high velocity air hood so as to be subjected to an air pressure differential across the same. Thus, heated or unheated air is caused to be engaged against one side of the sheet-like material and pass therethrough to the other side thereof to remove moisture from such sheet-like material as the air passes therethrough, such moisture being removed by a pushing out of the moisture by the air, by air entrainment and/or by adiabatic evaporation. A belt means of this invention comprising a perforated flexible wall carrying felt, fabric or other similar material on one side thereof is utilized in a manner to engage against the moist sheet-like material to compress the same during the passage of air through the perforated flexible wall and through the moist sheet-like material to assist in the water removal thereof by either tending to cause the porosity of the drying sheet-like material to remain substantially constant so that an optimum substantially constant air flow passes therethrough or to cause a greater air flow rate through the wetter portions of said sheet-like material than through the drier portions thereof.

3,771,237

DEVICE FOR DRYING DAMP POWDERS

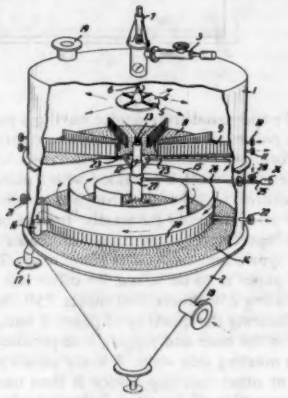
Ove Emil Hansen, Vaerlose; Tom Kahler, Lyngby, and Pierre Mengel, Virum. all of Denmark, assignors to Aktieselskabet Niro Atomizer, Soborg, Denmark

Filed Apr. 4, 1972, Ser. No. 240,929

Claims priority, application Denmark, Apr. 16, 1971, 1834

Int. Cl. F26b *17/10*

U.S. Cl. 34—57 A **3 Claims**



A device for drying powders with a high moisture content comprising a drying chamber with a powder inlet and a drying gas outlet at the top and a powder outlet and a drying gas intake at the bottom, a perforated supporting plate being mounted in the upper portion of the chamber, a rotating distributor being provided centrally beneath the powder inlet above the perforated plate. Immediately above the perforated plate a number of heating elements are arranged, whereas one or several overflows leads from the perforated plate down to an additional perforated supporting plate mounted below the first one and provided with a number of vertical guiding walls and a number of overflows communicating with the powder outlet.

3,771,238

LAUNDRY APPARATUS

Donald E. Vaughn, 3105 Southside Blvd., Jacksonville, Fla.

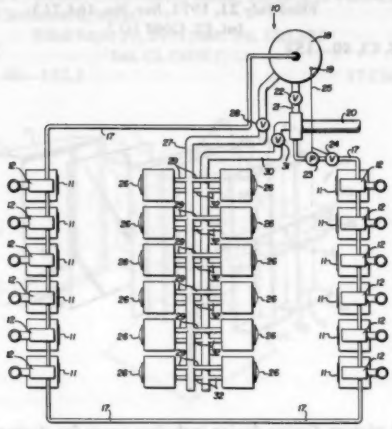
Filed Mar. 21, 1972, Ser. No. 236,675

Int. Cl. F26b *19/00*

U.S. Cl. 34—86 **4 Claims**

A laundry dryer is provided with a heated enclosure containing a heat exchanger. Water is pumped to a hot water heater through a conduit which is connected to the heat exchanger so that the water is pre-heated by the heat exchanger. The pump and a valve are connected in the conduit and are operated in response to a thermostatic control for

the water heater which opens the valve and starts the pump when the water heater requires hot water. The pre-heating of



the water in the heat exchanger cuts down on heating requirements of the water heater, thus economizing on power costs for the water heater.

3,771,239

APPARATUS FOR DRYING A WEB BY USE OF AN AIR JET FLOW

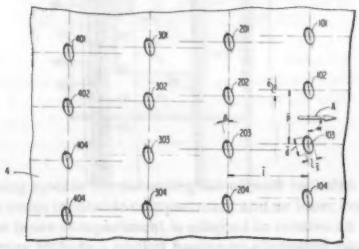
Minoru Minoda; Tetsuo Yoshida, and Hiroshi Chikamasa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 29, 1971, Ser. No. 213,640

Claims priority, application Japan, Dec. 30, 1970, 45/123032

Int. Cl. B26b *13/20*; B65h *17/32*

U.S. Cl. 34—156 **1 Claim**



An air-floating type web conveyor and dryer wherein a flexible web with a coating thereon is floated and conveyed by air from a perforated plate spaced therefrom. The size and arrangement of the holes in the plate are such that a substantially uniform static pressure is maintained between the web and the plate so as to uniformly dry the coating on the web and so that the air flow coming from the plate holes is not influenced by the lateral flow of air coming from the central portion of the web.

3,771,240

SELF-TEACHING SYSTEM

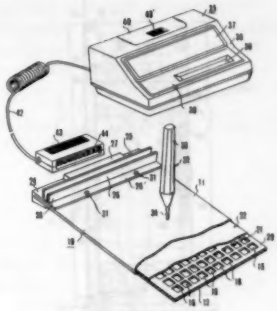
Megumi Matui, Ohta-ku, Tokyo, Japan, assignor to Gakken Co., Ltd., Tokyo, Japan

Filed July 8, 1971, Ser. No. 160,586

Claims priority, application Japan, Aug. 5, 1970, 45/77482; Aug. 21, 1970, 45/82832

Int. Cl. G09b *7/06*

U.S. Cl. 35—9 C **1 Claim**



An electric self-teaching system is comprised of a sensing device, a rod shaped implement thereby to work on the sensing device, and a displaying device. The sensing device includes an electrically insulating base on which a number of conducting portions are printed or otherwise formed, the conducting portions being electrically interconnected into a plurality of groups in a prescribed manner. An electrically conducting sheet is laid over the base through a comparatively thick insulating sheet having punched perforations in alignment with the aforesaid conducting portions. By pressure applied in a selected area on the sensing device, the conducting sheet is depressed into electric contact with one of the conducting portions thereby closing the corresponding one of the circuits that are respectively connected to lamps arranged adjacent a plurality of symbols within the displaying device. The symbol thus illuminated by the lamp is directly exhibited on a screen.

3,771,241

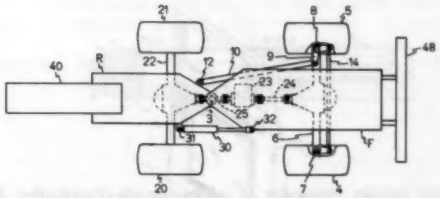
STEERING MECHANISM FOR TRENCHER

John F. Lindell, and Charles B. Hanson, both of Newton, Iowa, assignors to Koehring Company, Milwaukee, Wis.

Filed May 5, 1972, Ser. No. 250,756

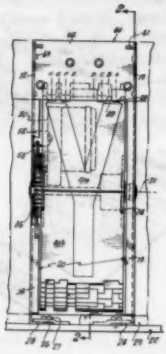
Int. Cl. E02f *5/06*; B62d *5/10*

U.S. Cl. 37—86 **3 Claims**



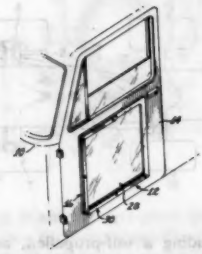
A trencher including a self-propelled, articulated frame vehicle having a front frame portion and a rear frame portion pivoted thereto, and a rearwardly extending trenching means for digging a trench as the vehicle moves over the ground. The front frame portion has a power plant and also a pair of laterally spaced, steering wheels. A combined steering effect is provided by having power means for swinging the front frame portion relative to the rear frame portion and also having an Ackerman type steering wherein the steerable front wheels are connected to the rear frame portion.

3,771,242
SPLIT FLAP DISPLAY MODULE
Eugene F. Lagasse, Chester, and Francis X. Geissler, Westbrook, both of Conn., assignors to Conrac Corporation, New York, N.Y.
Filed May 15, 1972, Ser. No. 253,014
Int. Cl. G09f 11/06
U.S. Cl. 40—35 5 Claims



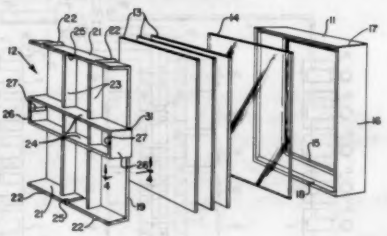
In the present split flap display system each vane carries a code configuration representing the corresponding character. Code reading mechanism is provided for reading the code configuration from each vane as it comes into display position and comparing it with a code configuration that has been generated or selected to represent the desired character. When those two codes agree, the drive is terminated with the selected vane in display position. A preferred type of code is binary four out of eight, and is applied to the vanes by selectively notching the vane edge at locations corresponding to the respective digits. Code reading switches can then be operated mechanically by the positioned vanes. Each vane in display position is urged toward switch operating position by abutment means acting between the vane and the vane carrier. When in display position, each vane is locked against reverse rotation of the carrier.

3,771,243
DISPLAY DEVICE
Edwin J. Rolph, 2931 W. Pierson, Phoenix, Ariz.
Filed Mar. 31, 1972, Ser. No. 239,946
Int. Cl. G09f 7/00
U.S. Cl. 40—129 C 2 Claims



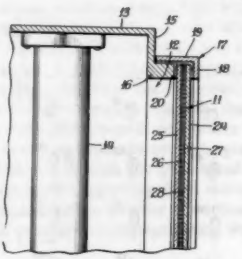
An enclosing structure particularly suitable for attachment to an automotive vehicle for containing and displaying printed material is provided with a transparent flexible panel which is fixedly secured on a portion of its perimeter to a supporting frame structure with the remainder of the perimeter providing a removably securable flap to facilitate interchanging of the material.

3,771,244
PICTURE DISPLAY AND STORAGE DEVICE
Emanuel C. Ebner, Chelmsford, Mass., assignor to Foto-Cube, Inc., Chelmsford, Mass.
Filed July 21, 1971, Ser. No. 164,713
Int. Cl. G09f 1/12
U.S. Cl. 40—152 7 Claims



A picture display device including space for storing several undisplayed pictures, the device being adapted to permit rapid change of the picture being displayed. This display device provides rigidity for protection of the pictures stored and displayed and yet is of simple and inexpensive construction. The pictures are positively retained for display and storage but changes are easily and quickly made. Alternative embodiments are shown, one of which includes two similar display devices secured together in order to permit different pictures to be observed from opposite sides of the device.

3,771,245
DISPLAY SYSTEM FOR LARGE COLOR TRANSPARENCIES
Lindell E. Mabrey, Highland Park, and Richard R. Miller, Oak Brook, both of Ill., assignors to Globe Glass Manufacturing Co., Elk Grove Village, Ill.
Filed Sept. 24, 1971, Ser. No. 183,411
Int. Cl. G09f 13/10
U.S. Cl. 40—106.1 2 Claims



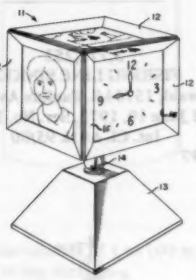
An illuminated display for large color transparencies includes a cabinet for housing a light source and providing a front opening. A laminate is mounted in the opening including front and rear sheets of clear plate glass, a color film transparency interposed between the glass sheets, a clear adhesive securing the transparency to the front sheet of glass, and a light-diffusing adhesive securing the transparency to the rear sheet of glass. The laminate forms a display medium which has the features of safety glass and which affords long-lasting protection for the transparency, yet it is economical enough that it may be replaced if desired without substantial replacement or installation costs.

3,771,246

PICTURE DISPLAY DEVICE

Emanuel C. Ebner, Chelmsford, Mass., assignor to Foto-Cube, Inc., Chelmsford, Mass.

Filed Sept. 27, 1971, Ser. No. 183,883
Int. Cl. G09f *1/12*
U.S. Cl. 40—152.1 **17 Claims**



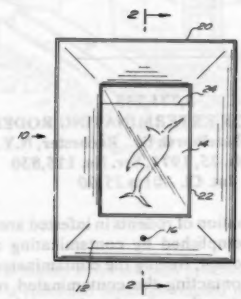
A modular display device adapted to stand individually on a flat surface or hang on a wall, and alternatively to cooperatively fit with five identical devices to form a three dimensional display device in cube form. Such a cube may include a suitable stand and some of the sides of the cube may be put to uses other than for displaying a picture. Several of the devices may be secured together by a connector to form flat combinations for display or educational toy purposes.

3,771,247

INFLATABLE ART FRAME

Rudolph De Harak, New York, N.Y., assignor to Corchia, de Harak, Inc., New York, N.Y.

Filed June 19, 1972, Ser. No. 264,347
Int. Cl. G09f *1/12*
U.S. Cl. 40—152 **5 Claims**



A framing system for mounting art objects includes a shell having an outer inflatable compartment and an inner compartment. The inner compartment is adapted to receive an art object and may include a pocket having an elongated pouch for receiving the object to be mounted. Valve means may be located in the outer compartment for inflating the compartment.

3,771,248

SHELL CATCHING ACCESSORY FOR FIREARMS

John Henry Linehan, Fort Worth, Tex., assignor to James C. Fails, Fort Worth, Tex., a part interest

Filed Mar. 27, 1972, Ser. No. 238,205
Int. Cl. F41c *27/00*
U.S. Cl. 42—1 R **7 Claims**

A shell catcher for a gun having a shell ejector port for discharging shells outwardly from its barrel characterized by a catcher comprising a flexible, lightweight, downwardly depending sack that contains the ejected shells therewithin and that has its entry end maintained adjacent the shell ejector port by a frame of a first portion of an attaching means for removably attaching it to the gun. A significant aspect of a particular embodiment is the provision of an elongate sack in the form of a chute that is at least three feet long and that has a

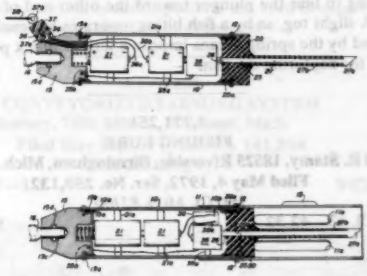
quick opening means adjacent its bottom end for dumping collected shells without having to remove the entry end from its connection with the gun. The elongate sack has a fastener for connecting its lower portion with the wearing apparel of a hunter for bearing a major portion of the weight of the collected shells. Also disclosed are the specific structural embodiments enabling removably attaching the entry end of the catcher to the first portion.

3,771,249

ELECTRIC ANTI-SHARK DART

Clarence S. Johnson, San Diego, Calif., and Henry D. Baldridge, Sarasota, Fla.

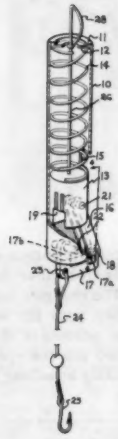
Filed Sept. 4, 1969, Ser. No. 855,233
Int. Cl. A01k *81/06*; F41b *15/04*
U.S. Cl. 43—6 **2 Claims**



A cylindrically-shaped casing is releasably carried on a spear shaft and houses a source of electric power delivering either a DC or an AC signal to an outwardly extending blade-shaped electrode at one end, and to a plug-shaped electrode on the casing's opposite end. Upon launching the spear shaft and embedding the blade electrode into a shark or similar marine predator, a concentrically-disposed sleeve mounting a magnet is longitudinally displaced along the casing to actuate a magnet-operated reed switch carried within the casing. In an alternative embodiment a pair of spring-biased contacts are substituted for the reed switch. The contacts extend through the casing and are electrically isolated from each other and the surrounding sea water by a removable insulating cap. An electric current, provided by the source of electric power,

passes in a completed circuit from the plug-shaped electrode, through the surrounding seawater, into the shark's body and returns via the blade-shaped electrode. When sufficient current is present, an involuntary muscular reaction is induced in capacitating the shark without creating noise or bloodying the water that often attracts other sharks.

3,771,250
FISH HOOK SETTING DEVICE
Emil A. Helmke, 4018 Parrakeet St., Toledo, Ohio
Filed July 31, 1972, Ser. No. 276,822
Int. Cl. A01k *97/00*
U.S. Cl. 43—15 **4 Claims**

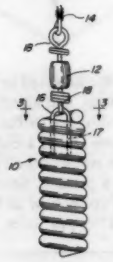


A fish hook setting device which conveniently can be interposed in the line between the fish hook and the fishing rod reel involving a toggle which, when in set position, is slightly over center. The toggle comprises a pair of levers with the end of one lever connected to a plunger slidable in a housing. A spring is disposed between the plunger and one end of the housing to bias the plunger toward the other end of the housing. A slight tug, as by a fish biting, operates to break the toggle and by the spring means impose a jerk or quick pull on the hook for capturing the fish.

3,771,251
FISHING LURE
David R. Stamy, 18525 Riverside, Birmingham, Mich.
Filed May 4, 1972, Ser. No. 250,132
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.32 **10 Claims**

A fishing lure comprising a plurality of spoon type lure members collectively nested and engaged together for pivotal relocation of each member in turn from a first position on one side of the group to a second position on the other side of the group. Each member has its opposite side faces of a different color and/or design and their next adjacent side faces of a like color and/or design. Means are provided for retaining the different members in selected nested arrangements and for attaching a leader line and fish hooks thereto.

3,771,252
FISHING LINE SINKER
William S. Odenwald, 15704 S. Paulina Ave., Harvey, Ill.
Filed June 19, 1972, Ser. No. 263,973
Int. Cl. A01k *95/00*
U.S. Cl. 43—44.97 **5 Claims**



A fishing line sinker comprising a cylindrical body made of a helical coil of soft non-resilient metal and having a swivel extending axially from one end for attachment of a fish line and for permitting the sinker to roll freely about the coil axis; the coil being capable of being stretched to increase its length and reduce its diameter to permit its being worked free from a snagged condition.

3,771,253
PROCESS FOR EXTERMINATING RODENTS
Levern Spain, 91 B Hazelhurst Dr., Rochester, N.Y.
Filed Feb. 25, 1971, Ser. No. 115,830
Int. Cl. A01m *25/00*
U.S. Cl. 43—124 **10 Claims**

Effective extermination of rodents in infested areas of urban communities is accomplished by contaminating a captured rodent with a skin poison, freeing the contaminated rodent in a target area and contacting the contaminated rodent with another rodent causing the second rodent to become contaminated with a lethal amount of skin poison.

3,771,254
INSECTICIDE-TREATED BAGS
John Troye Scott, Datchworth, Hertfordshire, and Roger Tuson Taylor, Maidenhead, Berkshire, both of England, assignors to Imperial Chemical Industries Limited, London, England
Claims priority, application Great Britain, Jan. 6, 1971, 660/71; June 22, 1971, 29179/71
Filed Jan. 4, 1972, Ser. No. 215,393
Int. Cl. A01m *1/10, 1/20*
U.S. Cl. 43—131 **5 Claims**

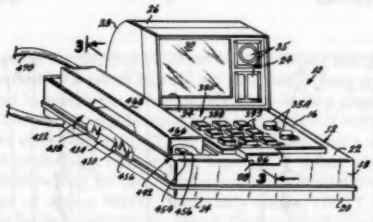
Plastic bags, especially polyethylene bags, coated or impregnated with an organophosphorus insecticide, especially

pirimiphos methyl. The pirimiphos methyl has a vapor pressure at 20° C in the range 1×10^{-3} -1×10^{-4} millimeters of mercury, and is used in an amount of 1 to 100 m.g. of the insecticide per square foot of bag surface.

3,771,255
AUDIO VISUAL TOY

George F. Carabet, Palos Verdes Peninsula; Andrew M. Holland, Los Angeles; Joseph P. Morris, Huntington Beach; William B. Pester, Palos Verdes Peninsula; Harold A. Osborne, Fullerton, and William Hart, Palos Verdes Peninsula, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 28, 1971, Ser. No. 213,003
Int. Cl. A63h *33/30*
U.S. Cl. 46—33 9 Claims



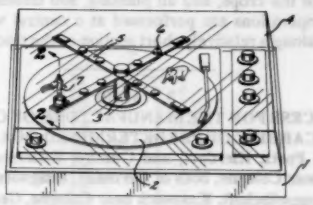
Mechanical means automatically synchronizes picture to be viewed with a recorded message related to the picture being viewed. A unitary picture-record disc has circumferentially-spaced pictures and lead-in groove bearing a predetermined spaced-apart relationship so that indexing the disc to bring a particular picture into viewing position automatically brings the correct lead-in groove into playing position where stationary record is played by a rotating tone arm which is automatically stopped at the same predetermined rotated position after each record playback.

3,771,256
ANIMATED TOY

Orville I. Huebert, 2803 Silva St., Lakewood, Calif.

Filed Aug. 19, 1971, Ser. No. 173,156
Int. Cl. A63h *33/26*
U.S. Cl. 46—239 3 Claims

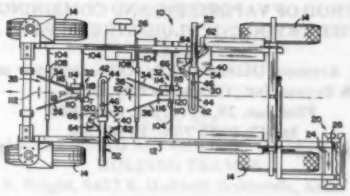
This invention relates to an animated toy which is actuated by a record player and which entertains a person by placing animated toys above the rotating arm or spindle of the record player, and also above spaced magnets above the rotating spindle of the record player.



3,771,257
TYING MACHINE

Berny L. Smith, Valrico, Fla., assignor to Transcinor Incorporated, Miami, Fla.

Filed Sept. 21, 1971, Ser. No. 182,434
Int. Cl. A01g *17/08*
U.S. Cl. 47—1 8 Claims

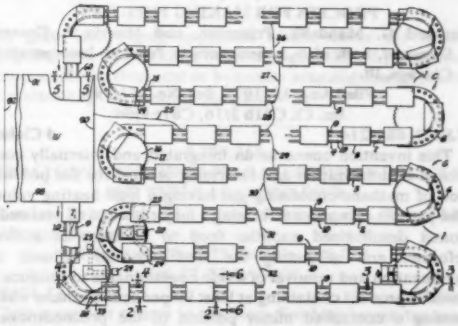


A vehicle having a supporting frame on which is mounted one or more tying assemblies designed to direct cord means in the form of string, cord, or the like in cooperative, supporting engagement about successively positioned stakes and plants arranged in alternate spaced relation to these stakes. Each tying assembly comprises a first and second hydraulic cylinder arrangement operatively connected to one another so as to be successively activated and thereby move a cord directing tube in a desired pattern in order to position the cord in supporting relation about the stake and plant as desired.

3,771,258
CONVEYORIZED FARMING SYSTEM

Andrew Charney, 7484 Affeldt, Westland, Mich.

Filed May 10, 1971, Ser. No. 141,894
Int. Cl. A01g *9/18*
U.S. Cl. 47—1.2 9 Claims



Farming is conducted by planting crops in soil carried by pallets connected together in an endless chain and moved

around a serpentine-like trackway, the major length of which is laid out over external terrain so that the contents of the pallets may be exposed to the sun and weather for nurturing and growth of the crops, and all planting, soil treatment and harvesting operations are performed at a central work area extending along a relatively short section of the trackway.

3,771,259

PROCESS FOR THE MANUFACTURE OF CALCIUM CARBIDE OF PREDETERMINED QUALITY

Wilhelm Portz, Kierdorf, and Gunther Rittershausen, Knapsack near Cologne, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed July 8, 1970, Ser. No. 53,287

Claims priority, application Germany, July 12, 1969, P 19 35 567.0

Int. Cl. C10b *21/10*

U.S. Cl. 48—60 **3 Claims**

Production of calcium carbide of low gas yield from calcium carbide of higher gas yield. Calcium oxide having a particle size of between 1 and 8 mm is introduced,preferably during tapping, into the melt of such calcium carbide of higher gas yield.

3,771,260

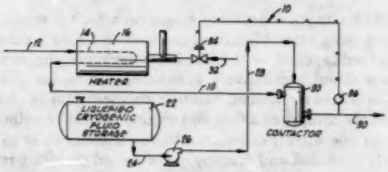
METHOD OF VAPORIZING AND COMBINING A LIQUEFIED CRYOGENIC FLUID STREAM WITH A GAS STREAM

Edwin M. Arenson, Oklahoma City, Okla., assignor to Black, Sivalls & Bryson, Inc., Oklahoma City, Okla.

Filed Jan. 29, 1970, Ser. No. 6,889

Int. Cl. B05b *7/00*; F17d *1/04*

U.S. Cl. 48—190 **5 Claims**



The present invention relates to methods of vaporizing and combining a stream of liquefied cryogenic fluid with a gas stream. The gas stream is heated, and the liquefied cryogenic fluid stream is injected directly into the heated gas stream and intimately contacted therewith so that the cryogenic fluid is vaporized and combined with the gas stream.

3,771,261

PROCESS FOR MAKING FUEL GAS

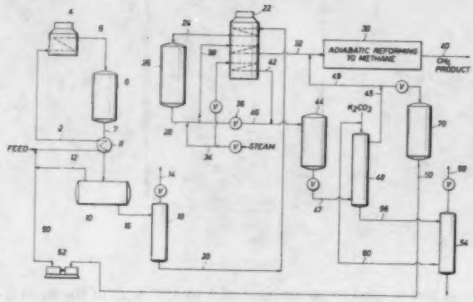
Bernard G. Mandelik, Princeton, and Marvin I. Greene, Somerset, both of N.J., assignors to Pullman Incorporated, Chicago, Ill.

Filed Aug. 16, 1971, Ser. No. 171,999

Int. Cl. C01b *2/16*; C07c *9/04*

U.S. Cl. 48—214 **4 Claims**

This invention concerns an integrated and internally controlled desulfurization and reforming process for the production of methane-containing gas having a high heating value. The process comprises reforming a major portion of preconditioned desulfurized naphtha feed to methane in a first reformer and subjecting the first reformer effluent to methanation and removal of oxide contaminants to produce a gaseous product containing at least 90 per cent methane while passing a controlled minor portion of the preconditioned desulfurized naphtha to a second reformer wherein under a higher steam to carbon ratio, increased by a ratio of at least 0.5 over the first stage reforming, and under more severe reaction conditions, the naphtha undergoes a shift reaction to maximize the production of hydrogen in the second reformer. The hydrogen-containing effluent from the second reformer is decontaminated by removal of inorganic oxides and the decontaminated essentially oxide of carbon free, hydrogen-rich gas is contacted with fresh feed in a desulfurization zone



wherein a mole ratio of hydrogen to sulfur is maintained preferably between about 400:1 and about 850:1 for the catalytic desulfurization of sulfur contaminated naphtha feed. The sulfur contaminants in the naphtha feed are converted to hydrogen sulfide which is scrubbed from the feed to produce a desulfurized naphtha suitable for reforming to methane under comparatively mild conditions.

3,771,262

GATE AND BRAKING APPARATUS THEREFOR

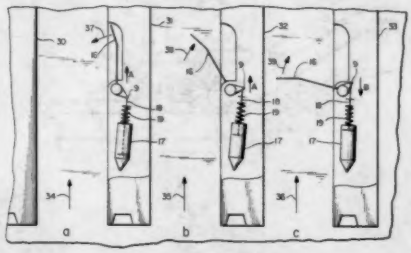
Jean-Claude Gaulier, New York, N.Y., assignor to Compteurs Schlumberger, Montrouge, France

Filed Feb. 17, 1972, Ser. No. 227,067

Claims priority, application France, Feb. 22, 1971, 7105946

Int. Cl. E05d *15/12*

U.S. Cl. 49—43 **6 Claims**



A gate for closing a corridor is provided, the gate having driving means and means to terminate its motion if an opposing force is applied while the gate is being closed. The gate is mounted on a fixed axis and the apparatus rotates about a fixed hub. The driving force to close the gate is applied to a rotatable member which rotates about the axis of the hub and which is coupled to a second rotating member through a lost motion coupling and a spring, which spring transmits the driving force. The second rotating member carries and rotates the gate. If a force is applied to the gate in a direction which would oppose the closing motion, and which is of sufficient magnitude, the spring extends and the lost motion coupling permits relative movement between the first and second members. A plurality of fingers carried by the first member are then moved an amount sufficient to permit a locking apparatus to engage the hub and the second member, preventing further rotary motion between these members until the force

is removed and the spring recovers the motion in the lost motion coupling. The locking device disclosed includes a plurality of surfaces formed on the second member, which surfaces slope toward the hub and form, with corresponding surface portions on the hub, converging channels. A plurality of rollers are disposed in the large ends of these channels, the rollers being urged toward the small ends of the converging channels by springs. During normal rotation, a plurality of fingers carried by the first member keep the rollers out of contact with the hub, but when the spring in the lost motion coupling is extended and the first member moves relative to the second, the fingers move away from the rollers, allowing their respective springs to urge them into contact with the walls of the converging channls, thereby locking the hub and second member together.

3,771,263

METHOD FOR DISPOSAL OF REFUSE BY DEGASIFYING AND GASIFICATION THEREOF

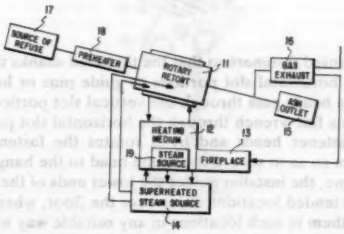
Georg Borggreen, Kolding; Jorn Kragh, Hillerod, and Erik Holm Laustsen, Kolding, all of Denmark, assignors to Georg Borggreen, Kolding, Denmark

Filed Feb. 22, 1971, Ser. No. 117,829

Claims priority, application Denmark, Feb. 24, 1970, 884/70

Int. Cl. C10j *3/06, 3/20;* **F23g** *5/00*

U.S. Cl. 48—209 **12 Claims**



A method for disposal of refuse by degasifying and gasification thereof in a retort having gas exhaustion near its outlet end, and in which the refuse is heated to such a degree that within the retort a gasification zone is maintained with a temperature of not below 900°C, by which new method a substantial part of the heat required for heating the refuse within the retort is obtained by means of steam superheated to a temperature of above 900°C, preferably above 1200°C, which steam is introduced into the retort. Preferably the steam or a part thereof is conducted through the retort co-current with the refuse, but most conveniently a part of the superheated steam is introduced into the retort between the refuse inlet and the gasification zone. Also it is recommended that the refuse is preheated to a temperature of 500° to 700°C before being influenced by the superheated steam. In many cases it may be appropriate that also at least a part of the retort wall is directly heated. Most advantageously a retort of the type corresponding to a rotary kiln is used.

3,771,264

REVERSIBLE WINDOW ASSEMBLY FOR A PERMANENTLY CLOSED WINDOW OPENING

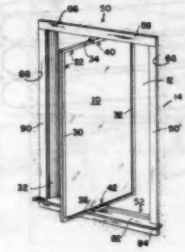
William S. Sawle, 425 Grove St., Evanston, Ill.

Filed Feb. 24, 1972, Ser. No. 229,054

Int. Cl. E06b *3/34*

U.S. Cl. 49—390 **5 Claims**

A reversible window assembly embodying a rectangular, sealed, dual-pane window unit which is mounted on axially aligned, horizontal trunnions for rotation about a vertical axis and within the associated window opening. Removable molding strips on the inside of the window replace the conventional permanent window stops and allow freedom of swinging movement of the window unit and its glass panes after a movable element of one of the side jamb assemblies is shifted to an



out-of-the-way position so as to release the window unit entirely. A split, trunnion-receiving bearing facilitates complete window unit removal for glass replacement or repair purposes.

ERRATUM

For Class 49—43 see:
Patent No. 3,771,262

3,771,265

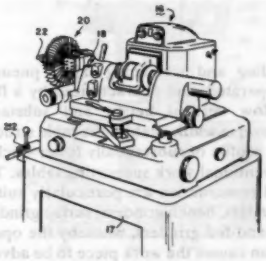
GLASS LENS EDGING APPARATUS FOR SENSING LENS HOLDING FRAMES

Charles R. Bright, 8423 E. Hubbell, Scottsdale, Ariz.

Filed Jan. 21, 1972, Ser. No. 219,634

Int. Cl. B24b *9/08*

U.S. Cl. 51—101 LG **7 Claims**



A glass lens edging apparatus which senses the inside periphery of a lens holding frame at a plurality of points and uses pneumatic, electrical or hydraulic actuated sensor points for controlling lens forming equipment.

3,771,266

VIBRATORY FINISHING APPARATUS WITH A HELICAL AND TUBULAR CONTAINER

Hisamine Kobayashi, 13,3-chome Kikuzono-cho, Showa-ku, Nagoya, Japan

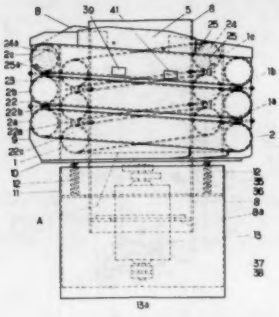
Filed Apr. 28, 1971, Ser. No. 138,170

Int. Cl. B24b *31/06*

U.S. Cl. 51—163 **3 Claims**

This invention relates to vibratory finishing apparatus usable for deburring, grinding and polishing workpieces, having a helical and tubular container wound in multi-fold and in multistoried arrangement, said container being connected at each

end forming a continuous and endless tube, and having a vibration generating device vibrating said container, workpieces and media, affording spiral and circulatory movements to said workpieces and media.



3,771,267

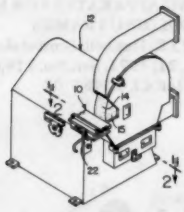
WORK-HOLDING AND ADVANCING TABLE

Anthony C. Fortunski, Grosse Pointe Park, Mich., assignor to Fargo Machine & Tool Company, Detroit, Mich.

Filed May 26, 1972, Ser. No. 257,194

Int. Cl. B24b *41/02, 41/06*

U.S. Cl. 51—215 R **25 Claims**



A work-holding and advancing table, pneumatically or hydraulically operated, and characterized by a fluid cylinder of relatively low vertical height and substantially wide horizontal transverse width enables the table structure to have a low compact profile of substantially lesser thickness than is present in conventional work supporting tables. Tables of the hereindisclosed construction are particularly suitable for use on snagging grinders, bench grinders, surfae grinders, pedestal grinders, and hand-fed grinders, whereby the operator at the touch of a button causes the work piece to be advanced by the table directly into contact with the peripheral edge of a grinding wheel, to travel a predetermned distance toward the wheel, and to retract to initial position under spring bias, upon release of the pneumatic or hydraulic force, or by pneumatic or hydraulic action.

3,771,268

PRE-ASSEMBLED UNITARILY-INSERTABLE HANGER-ATTACHED ELEVATOR SHAFT ENTRANCE CONSTRUCTION

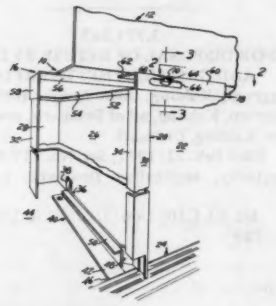
Charles M. Loomis, P.O. Box 453, Arkansas City, Kans.

Filed Aug. 30, 1972, Ser. No. 285,027

Int. Cl. B66b *9/00*; E06b *1/04*

U.S. Cl. 52—30 **10 Claims**

For insertion in the entrance opening of an elevator shaft, the present invention provides a pre-assembled entrance frame including a horizontal frame head to which is attached the upper ends of two laterally-spaced vertical jambs. Previously secured in the elevator shaft wall above the entrance opening thereof is an unfolded Z-section hanger provided with an outwardly-projecting flange equipped with a depending pair of laterally-spaced threaded headed fasteners, which also serve as locating pins for the entrance frame. The horizontal sheet metal wall of the entrance frame head is provided at its inner or rearward edge with an upstanding L-section flange having a vertical web portion and a reversely-bent horizontal portion. This vertical web portion is provided with a pair of horizontally-elongated laterally-spaced angle Tee-slots of the same separations as the hanger fasteners, the slots having narrow horizontal portions extending forwardly into the horizontal flange. The entrance frame is preassembled, as in the adjacent corridor and is then slid into the shaft entrance opening with its horizontal head slots aligned with the heads of the hanger-mounted fasteners so that the threaded shanks thereof enter these horizontal slot portions as guide pins or locating pins and the heads pass through the vertical slot portions. He then inserts a flat wrench through the horizontal slot portions onto the fastener heads and by it rotates the fasteners to tighten them so as to secure the frame head to the hanger. At the same time, the installer guides the lower ends of the jambs into their intended locations on or near the floor, whereupon he secures them in such locations in any suitable way which is beyond the scope of the present invention. One such way is described and claimed in my co-pending application Ser. No. 124,127 filed Mar. 15, 1971, now U.S. Pat. No. 3,686,808 for Door Frame, Sill, and Facia Construction for Elevator Shaft Entrance Shaft Entrances.



3,771,269

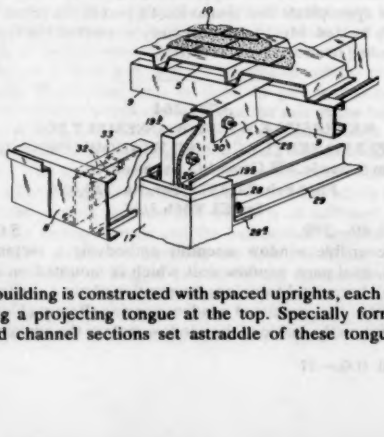
PREFABRICATED BUILDING AND ROOF PANEL FOR SAME

Adolph Felix Lerch, Valencia; Nick C. Otis, Monroeville, and John D. Montgomery, Washington, all of Pa., assignors to Advance Housing Corporation, Pittsburgh, Pa.

Filed July 8, 1971, Ser. No. 160,846

Int. Cl. E04b *7/04*

U.S. Cl. 52—93 **13 Claims**



A building is constructed with spaced uprights, each upright having a projecting tongue at the top. Specially formed inverted channel sections set astraddle of these tongues and

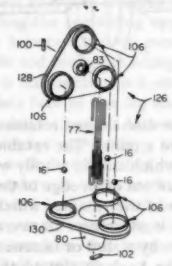
bolted thereto constitute rafter elements extending crosswise of the building and in gable and hip roofs these rafters slope upwardly from the posts and are joined at the ridge. Prefabricated roof panels have spaced inverted channels that nest over the rafters. The roof panels are lowered into position in a vertical plane, rested edgewise on the rafters and then swung over down to rest on the rafters. A gabled roof usually has two panels on each of its two slopes, each panel extending the full length of the roof. The outermost panels on each slope are first put into place and then the inner ones. The lower panels are swung from the vertical plane toward the ridge of the roof and the upper ones are swung down from the ridge toward the eaves to properly overlap. Uprights at the building corners are outwardly-facing angle sections through the flanges of which bolts are passed and screwed into nuts welded on the abutting vertical ends of the end wall panels, after which a cover member is secured in place.

3,771,270

SELF-CENTERING HORIZONTALLY TRANSLATABLE SUPPORT/HOLD-DOWN APPARATUS FOR BUILDING STRUCTURES AND THE LIKE

Jim L. Byers, Rt. 1, Box 204, Thermal, Calif.

Filed Dec. 13, 1971, Ser. No. 207,026
Int. Cl. E04h *9/02*
U.S. Cl. 32—67 **11 Claims**



A pair of confronting conical support surfaces confine therebetween a spherical ball bearing to define a structure support means which allows horizontal translation in any direction of one support surface relative to the other via the ball bearing. Structure hold-down means generally integral with the conical surfaces limits the vertical movement therebetween when the earth is at rest or when moving, while allowing horizontal translation. The structure support means and the structure hold-down means are disposed between the structure and its foundation, whereby horizontal movement of the earth due to earthquakes, etc., moves only the lower support surface. The upper support surface and the building experiences no horizontal movement due to the building inertia, and the frictionless lateral translation allowed by the ball bearing. The support means and the hold-down means may be combined in an integral unit of various configurations, or may be separated into separate units spaced between the structure and its foundation.

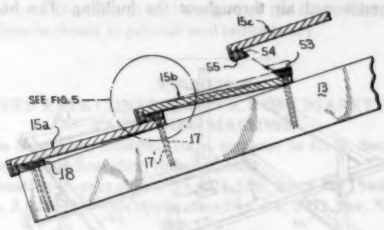
3,771,271

CLAPBOARD ASSEMBLY FOR ROOFS AND SIDINGS

Harry L. Keel, 239 Shamrock Blvd., Venice, Fla.

Filed Apr. 14, 1972, Ser. No. 244,008
Int. Cl. E04d *1/20, 1/26, 1/36*
U.S. Cl. 52—478 **13 Claims**

An epoxy-joined-and sealed weatherproof clapboard assembly comprising a plurality of interlocked clapboards which are adhesively joined along beveled mating surfaces and epoxy-coated on all weather-exposed surfaces, each clapboard having a beveled drip edge and a beveled shelter edge, whereby the epoxy coating forms a C-joint which grasps the lower or drip side of the clapboard rather than merely holding it in shear. Each clapboard is sealed with an epoxy resin on all surfaces before assembly and comprises an elongated panel to which a pair of inwardly beveled interlocking strips are adhesively attached along each long edge and on opposite sides of the panel. The upper holding interlocker is on the weather sur-



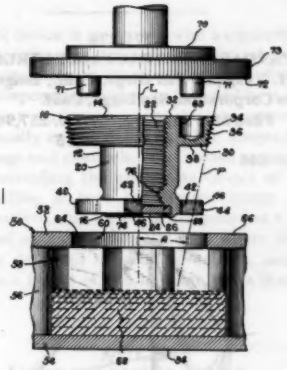
face and adjacent to the upper side of the installed panel, and the lower sealing interlocker is on the interior or protected surface and adjacent to the drip side of the installed panel. Each panel is also provided with lap joints along its end, whereby the clapboards are adhesively conjoined end-to-end, and is preferably one-half inch thick.

3,771,272

FLUSH MOUNTING INSERT FOR SANDWICH PANELS

Michael F. Mihaly, Madison, and Charles C. Faroni, Summit, both of N.J., assignors to Amerace Esna Corporation, New York, N.Y.

Filed Apr. 9, 1971, Ser. No. 132,745
Int. Cl. F16b *39/282*
U.S. Cl. 52—617 **8 Claims**



A threaded insert to be installed flush with the surface of an outer sheet of a sandwich panel and to be secured in the panel by a hardenable liquid adhesive, the insert having a flange at one end thereof with a tapered, threaded peripheral edge surface, which engages and positively grips the outer sheet along the corresponding edge of an opening in the sheet, through which opening the insert has been installed, so as to retain the insert in place within the sandwich panel, with the flange flush with the surface of the outer sheet, while the adhesive hardens.

3,771,273

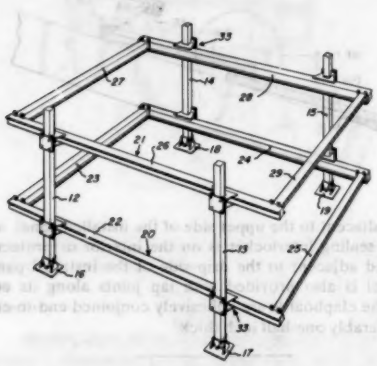
PREFABRICATED BUILDING

James H. Brodie, 1972 Grand Ave., St. Paul, Minn.

Filed Mar. 4, 1971, Ser. No. 120,816
Int. Cl. E04h *1/02*
U.S. Cl. 52—646 **8 Claims**

A prefabricated building which can be assembled, erected and later on dismantled and moved, wherein the entire struc-

ture is supported by four or more vertical posts and two or more horizontal structurally integral frames which are supported from the vertical posts and serve the triple purpose of stiffening the structure to resist the forces of wind, providing a beam system which supports full span roof trusses and full span floor joists, and providing the main ducts for distribution of conditioned air throughout the building. The horizontal



frames are secured to the posts by means of adjustable post clamps which allow for erection and stabilization of the building on unleveled ground and without a prepared foundation. The side walls of the building are formed of a plurality of panel assemblies through which conditioned air is circulated. Some of these panel assemblies are window assemblies and the circulation of conditioned air therethrough maintains the inner pane at substantially room temperature.

3,771,274

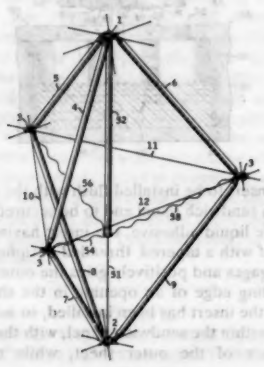
EXPANDABLE RETRACTABLE STRUCTURE

Desmond H. Vaughan, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed May 30, 1972, Ser. No. 257,904

Int. Cl. E04h *12/18*

U.S. Cl. 52—646 **9 Claims**



An expandable-retractable structure which in its simplest form comprises: a first set of three rigid links connected together by a first primary pivot at one end, a second set of three rigid links connected together by a second primary pivot at one end and pivotally joined to the first set of links by means of three secondary pivots each connecting corresponding links of said two sets, and a set of three bracing cables connecting the three secondary pivots to complete a double tetragonal structure. The structure is usable as a single module or in combination with a plurality of similar modules which, when combined with connecting cables, may form flat, tapered, or curved structures such as bridges, towers, outriggers, and scaffolds. An actuation system is provided comprising an extension cable connecting the primary pivots which when subjected to tension urges said first and second primary pivots toward one another, subjecting the bracing cables to tension and thereby stabilizing the structure, and a retraction means comprising cables connecting the three secondary pivots which when subjected to tension urge the secondary pivots toward one another and the primary pivots away from one another to return the structure to its original retracted form.

3,771,275

RETAINER FOR A HEADED MEMBER

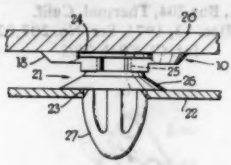
Clifford Alexander Seckerson, Iver Heath, England, assignor to TRW Inc., Cleveland, Ohio

Filed Apr. 5, 1971, Ser. No. 131,316

Claims priority, application Great Britain, Apr. 8, 1970, 16724/70

Int. Cl. F16b *5/12*

U.S. Cl. 52—758D **2 Claims**



A synthetic plastics disc-shaped retainer which can be adhered or welded on to a panel. The retainer is formed with a keyhole shaped slot which can lie wholly within the periphery of the or which can run out of an edge of the retainer. A recess is formed in the face of the retainer which is adhered to the panel and the recess is of greater transverse dimension than the keyhole slot whereby a stud or fastener having a flat head can be inserted in the keyhole slot so that the flat head is located in the recess behind the slot to attach the stud to the panel.

3,771,276

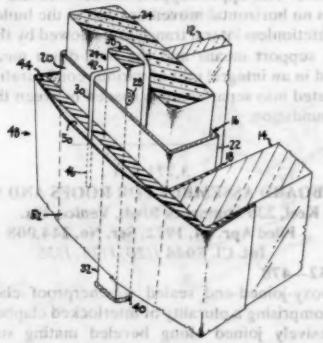
MULTIPLE-GLAZED BREATHER WINDOWS

John L. Stewart, Apollo, and George H. Bowser, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 70,840, Sept. 9, 1970, abandoned. This application July 14, 1972, Ser. No. 271,889

Int. Cl. E06b *7/12*

U.S. Cl. 52—172 **10 Claims**

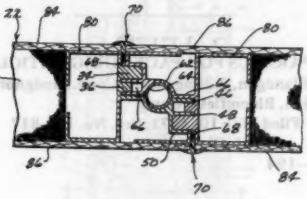


A multiple-glazed unit provided with breather apparatus comprising a capillary tube connected to an elongated column of desiccant material.

3,771,277
BUILDING AND METHOD OF CONSTRUCTING SAME FROM INTERCONNECTED PANELS

Ronald L. Rausch, Cedar Falls, and Donald A. Jacque, Dunkerton, both of Iowa, assignors to R-J Industries, Inc., Waverly, Iowa

Filed June 2, 1972, Ser. No. 260,124
Int. Cl. E04b *1/48*
U.S. Cl. 52—468 **16 Claims**

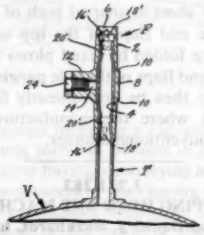


An A-frame building is constructed of a floor, opposite end walls and a roof on each side which extends from the floor to the peak of the building. The steps include first, interconnecting the panels to form the floor and then erecting one end wall followed by alternately interconnecting part of oppositely disposed roof panels and then erecting the other end wall followed by assembling the remaining oppositely disposed roof panels. All joints between two or more abutting panels includes a removable rod interconnecting complementary joint half sections. Each half section is L-shaped with upstanding tongues on an inside face of one leg and the adjacent face of the other leg includes a channel. An outwardly facing edge of the other leg includes upstanding wall portions defining grooves. The half-joint sections when interconnected define a bore circular or square in cross section and the upstanding tongues are positioned in the grooves between the upstanding walls. A rod having a corresponding cross section to that of the bore is positioned in the bore to restrict movement between the joint half sections.

3,771,278
FITTING AND METHOD FOR FILLING OR EVACUATING A CONTAINER

James G. Gray, Ferguson, and Kenneth E. Sontag, St. Louis, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Aug. 2, 1972, Ser. No. 277,394
Int. Cl. B65b *31/04*
U.S. Cl. 53—7 **11 Claims**

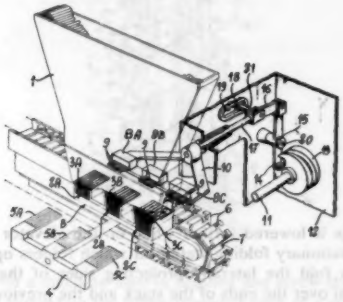


A container having a communication tube extended from it is easily and quickly filled or evacuated through a fitting which is swaged over the tube. Once the container is filled or evacuated, the fitting is swaged over the tube at a second location to seal the tube. The fitting has a barrel which is closed at one end and is further provided with a main bore which opens out of the other end and receives the tube. The mid-portion of the barrel is enlarged and a cross bore opens into the main bore at this enlarged mid-portion. Initially, the portion of the barrel between the enlarged mid-portion and the open end is swaged over the tube. Then the container is filled or evacuated through the cross bore which communicates with the interior or the container through the unswaged portion of the main bore and the tube. Thereafter, the portion of the barrel between the closed end and the enlarged mid-portion is swaged over the tube to seal the end of the tube. Finally, the cross bore is closed to provide seal redundancy.

3,771,279
FEED RATE CONTROL DEVICE OF CIGARETTE PACKAGING MACHINE

Ariosto Seragnoli, Bologna, Italy, assignor to G. D. Societa in Accomandite Semplice, Bologna, Italy

Continuation-in-part of Ser. No. 721,525, April 15, 1968, Pat. No. 3,628,309. This application Oct. 14, 1971, Ser. No. 189,355
Int. Cl. B65b *67/16*
U.S. Cl. 53—56 **3 Claims**



This control device is associated with a cigarette packaging machine comprising a main supply hopper subdivided into a plurality of channels at its lower portion for delivering cigarettes at dispensing stations and carried by a conveyor of the intermittent motion type; the device comprises several feelers electrically connected in parallel, adapted to register with and engage said channels; relay means responsive to said feelers for controlling the energizing circuit of other relay means controlling in turn the electric motor driving the packaging machine, said feelers are disposed at a higher level than planes of said dispensing stations where the layers of cigarettes are delivered to said* containers, said level corresponding to a height of five to seven times that of a single layer.

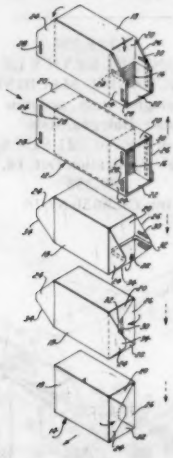
3,771,280
END FOLDING MACHINE

Rudolph P. Bechle, Wyckoff, N.J., assignor to Potdevin Machine Co., Teterboro, N.J.

Filed Apr. 10, 1972, Ser. No. 242,497
Int. Cl. B65b *11/18, 11/12, 11/22*
U.S. Cl. 53—32 **10 Claims**

An end flap folding mechanism is provided for completing the wrapping of wrapper material about a stack or bundle of paper bags. The mechanism receives a partially wrapped package containing a stack of bags in which the wrapping material is in tubular form about the stack and also projects beyond each end thereof. This partially wrapped package is transported to an elevator which cooperates in moving the partially wrapped package through several stationary folding stations. Initially, the elevator moves the partially wrapped package upwardly through a first folding station at which stationary folders engage with the projecting top of the wrapping material and folds it downwardly against the associated end of the stack. During the elevation of the package, glue is applied at selected zones of the projecting sides of the wrapping

material. When the package reaches its uppermost point of travel on the elevator, the top of the package is gripped by a plunger; and, thereafter, the elevator descends along with the plunger and the interposed gripped package. The partially wrapped package is then transported through a second stationary folding station at which stationary folders engage the laterally projecting bottom of the wrapping material and folds it upwardly over the associated end of the stack. The gripped



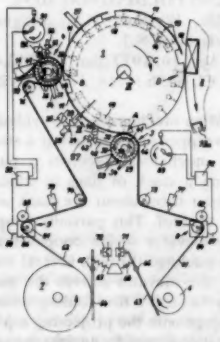
package is lowered further while on the elevator through a third stationary folding station at which folders operating in tandem fold the laterally projecting sides of the wrapping material over the ends of the stack and the previously folded top and bottom projections of the wrapping material. The previously applied glue serves to maintain the folded end flaps in this folded condition. Thereafter, the completely wrapped package is discharged from the machine.

3,771,281

APPARATUS FOR TRANSPORTING DISCRETE COMMODITIES TO HIGH-SPEED CONSUMING MACHINES OR THE LIKE

Fritz Witte, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Continuation of Ser. No. 43,732, June 5, 1970, abandoned.
This application May 8, 1972, Ser. No. 250,955
Claims priority, application Germany, June 26, 1969, P 19 32 360.5
Int. Cl. B65b *41/12, 57/02*
U.S. Cl. 53—64 **19 Claims**



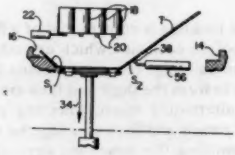
A packing machine for cigarettes or other tobacco-containing products receives a continuous stream of blanks of wrapping material from a suction conveyor which moves past two transfer stations at each of which it can receive blanks from a separate blank forming and feeding unit. These units sever the leading ends of webs of wrapping material and one thereof begins to form and deliver blanks to the suction conveyor when the web which is being severed by the other unit is exhausted, and vice versa. The position of each web with reference to the corresponding unit can be adjusted automatically in response to scanning of bits of information which is encoded on the webs.

3,771,282

APPARATUS FOR PACKAGING ARTICLES

Thomas L. Flanagan, Killingworth, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed May 10, 1971, Ser. No. 141,817
Int. Cl. B65b *11/20, 47/10*
U.S. Cl. 53—194 **5 Claims**



An automatic machine is disclosed for wrapping a blank of corrugated paperboard around an array of articles, and for gluing end flaps of the side panel to form a sealed package. The machine includes a frame having an elevator structure equippped with vacuum means for drawing a blank downwardly between flap folding, or camming means, to form the blank into a generally U-shaped configuration at the bottom of the stroke of the elevator structure. An array of articles to be packaged is dropped upon the bottom panel of the blank intermediate the upper, or initial position, of the elevator structure and the lower or second position, so that both the article array and the blank are travelling in the same direction when they contact one another. The vacuum means releases the bottom panel of the U-shaped carton blank at the lower or second position of the article array, and the unit is captured at this position in the pocket of an intermittently operated pocket chain conveyor in order to support the resulting package while the end flaps of the side panels are sequentially closed against the ends of the article array. Simultaneously with horizontal movement of the package by the pocket chain conveyor, the top panel of the carton is folded downwardly by a movable plow so as to provide a box for the articles in a very short L-shaped path of movement of the article array. The end flaps of the top and bottom panels of the package are folded by fixed plows in a conventional manner after the end flaps of the side panels have been glued. The package may then be conveniently fed into a vertical compression unit where the manufacturer's tab is glued and folded in a conventional manner.

3,771,283

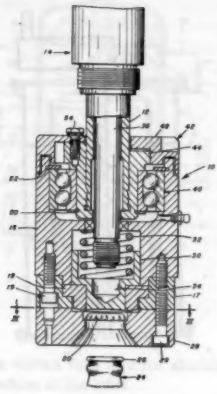
CAPPING HEAD AND MACHINE

David J. Over, and Daniel J. Burkhardt, both of Richmond, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 30, 1972, Ser. No. 285,078
Int. Cl. B65b *7/28*
U.S. Cl. 53—201 **10 Claims**

A capping head is provided which includes a head body with a throat therein for crimping or otherwise deforming a portion of a closure to affix it to a container and further including an adapter for securing the head on a rotating sleeve on a capping spindle with the adapter providing a rotatable connection

between the head and the sleeve so that axial travel of the sleeve will be transmitted to the head without rotating the



head. A capping spindle and a capping machine including such a capping head or heads are also provided.

3,771,284

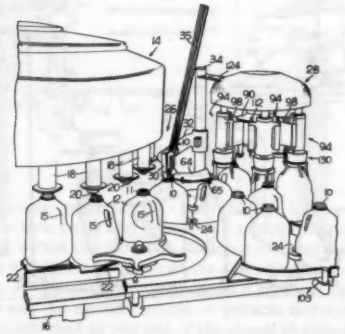
CAPPING APPARATUS

Hugo Boeckmann, Wheeling, Ill., and William F. Hammernik, Greenfield, Wis., assignors to Federal Mfg. Co., Milwaukee, Wis.

Filed Sept. 20, 1971, Ser. No. 181,827

Int. Cl. B65b *7/28;* **B67b** *3/08, 3/20*

U.S. Cl. 53—282 **18 Claims**



A capping apparatus including a cap attachment assembly and a cap tightening turret to be used in conjunction with a container filling turret having a conveying apparatus for transferring the filled containers to the capping turret. The cap attachment assembly includes a housing for supporting a cap in the path of motion of the neck of the container and a pretightener assembly positioned to level the cap on the neck of the container as the cap is pulled from the housing and to impart an initial rotary motion to the cap prior to entering the cap tightening assembly. The cap tightening turret includes a number of spindles having continuously rotating heads and a corresponding number of pedestals for moving the necks of the containers into the rotating heads. Each of the heads includes a resilient ring to frictionally engage the outer periphery of the cap to rotate the cap into tight engagement with the neck of the container.

3,771,285

BEADING AND/OR SCREW-THREADING MACHINE HEAD, FOR METAL CAPS USED FOR STOPPERING CONTAINERS HAVING A POURING MOUTH

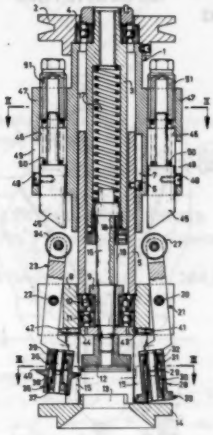
Luigi Bertario, Milan, Italy, assignor to Alluminio Mauceri Borghetto S.p.A., Milan, Italy

Filed Nov. 10, 1971, Ser. No. 197,203

Claims priority, application Italy, Nov. 11, 1970, 31615 A/70

Int. Cl. B65b *7/28;* **B67b** *3/18*

U.S. Cl. 53—334 **2 Claims**



A head for a machine used in beading and screw-threading metal caps slipped on the screw-threaded neck of a container (e.g. a bottle) is disclosed, in which the annular cam of the prior art machine has been sub-divided into sector-like cam portions so as to render adjustable the pressure imparted by each of the levers controlled by the cam individually. Stated alternatively, each cam sector controls a lever independently of the others, so that accuracy is improved and the machine is more readily adapted to possible unevennesses of the container's neck.

3,771,286

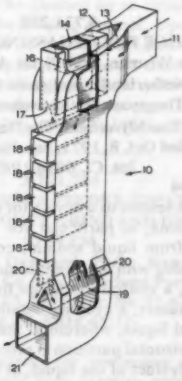
METHOD OF COAGULATING AEROSOLS

David S. Scott, Oakville, Ontario, Canada, assignor to Chubb Industries Limited, East Brampton, Ontario, Canada

Filed Feb. 4, 1972, Ser. No. 223,514

Int. Cl. B01d *51/08*

U.S. Cl. 55—15 **14 Claims**



A method of coagulating aerosols is disclosed which comprises setting up either planes or lines of particulate concen-

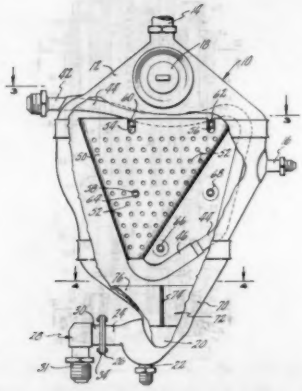
trations by means of one or more standing acoustic fields and then further concentrating and therefore coagulating the particulate material by propagating a sawtooth wave along the lines or planes of particulate concentration.

3,771,287

DEAERATING OIL TANK

George E. Sunderland, Lake Park, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 2, 1972, Ser. No. 294,401
Int. Cl. B01d *19/00*
U.S. Cl. 55—182 **6 Claims**



An oil tank is constructed having a perforated funnel therein. Oil scavenged from the engine is delivered by a tube to an opening in the small bottom of the perforated funnel. The delivery tube passes over the large elongated open top of the funnel acting as a cover means and deflector. As the oil passes through this funnel in a direction of increasing cross sectional area its velocity is reduced. Large air bubbles escape directly to the top of the funnel and smaller air bubbles are strained out as the oil passes through the perforations in the funnel. The oil then passes through a baffle device below the perforated funnel to a small compartment in the bottom of the tank. An outlet in this chamber directs deaerated oil to the engine main pressure pump. In some installations the top of the funnel could follow closely the shape of the tank at that point and even be attached to the tank, so that all oil would have to pass through the perforations.

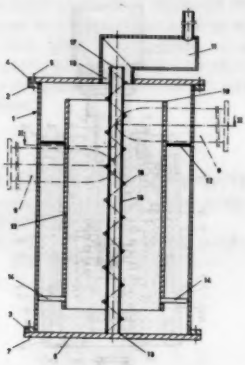
3,771,288

DEVICE FOR DEGASSING A LIQUID

Gerrit Marinus Wisman, and Pieter Adam Van Rijs, both of Apeldoorn, Netherlands, assignors to Nederlandse Organisatie Voor Toegepast Natuurwelenschappelijk Onderzock Ten Behoeve Van Nijverheid, The Hague, Netherlands

Filed Oct. 8, 1971, Ser. No. 187,828
Int. Cl. B01d *19/00*
U.S. Cl. 55—204 **3 Claims**

The invention relates to a device for degassing liquids, while applying a cyclone, in particular for removing an inert gas such as argon from liquid sodium, comprising a cylindrical container provided with a tangential supply duct for the liquid to be degassed, a central discharge for the gas at the upper side of the container, a cyclone mantle and a discharge duct for the degassed liquid, wherein at the inner side of the container wall a horizontal partition is provided that lies under the tangential supply duct of the liquid, at which partition a cylindrical cyclone mantle is attached that is concentrical with this container, which cyclone mantle is open at the upper and lower sides and whose upper edge lies over the supply duct and whose lower edge is situated near the bottom of the container, while at a slight distance under the partition the



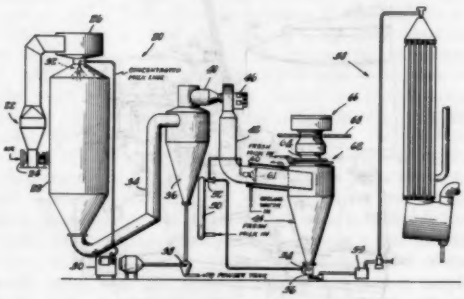
discharge duct for the degassed liquid is connected to the space between the cyclone inner mantle and the container wall.

3,771,289

COLLECTION DEVICE FOR DRYER EXHAUST GASES

Sigmund P. Skoli; Harry G. Mojonnier; Chester J. Witt; Walter A. Seyfarth, and Victor H. Ross, all of 4601 W. Ohio St., Chicago, Ill.

Continuation of Ser. No. 642,450, May 31, 1967, abandoned.
This application June 9, 1969, Ser. No. 834,598
Int. Cl. B01d *47/06*
U.S. Cl. 55—222 **4 Claims**



Wet-process apparatus for removing suspended particles from dryer exhaust gases including a spray device delivering atomized liquid into the gas stream and a vessel with cooled or wetted surfaces for collecting liquid from the gases together with the particles trapped by the liquid.

3,771,290

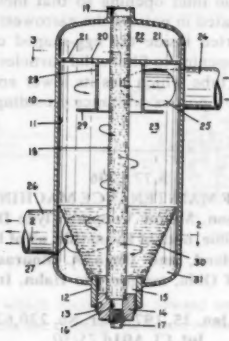
VORTEX DE-AERATOR

Walter C. Stethem, Toronto, Ontario, Canada, assignor to S. A. Armstrong Limited, Toronto, Ontario, Canada

Filed Dec. 6, 1971, Ser. No. 205,188
Int. Cl. B01d *19/00, 53/24*
U.S. Cl. 55—205 **5 Claims**

In a vortex type de-aerator for separating air and other gases from a flowing liquid, having a central perforate tube located

within a vessel having a tangential inlet and a tangential outlet, a vortex stabilising baffle device is located adjacent to the inlet

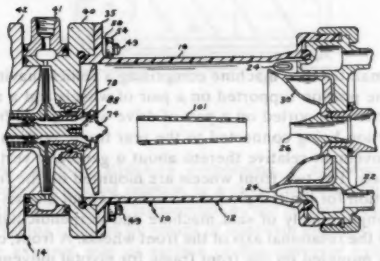


for stabilising the vortex flow and for shielding separated gas from any disturbances at the inlet.

3,771,291
PARTICLE ACCUMULATOR WITH PARTICLE EXTRACTOR AND STABILIZER

George A. Klingler, 300 Patterson Rd., Dayton, Ohio

Filed Dec. 1, 1971, Ser. No. 203,694
Int. Cl. B01d *45/12*; **G01n** *21/00*
U.S. Cl. 55—261 **4 Claims**



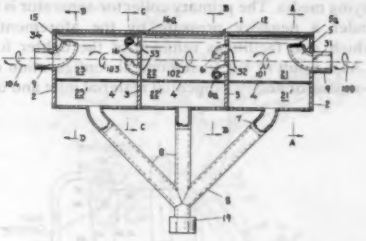
A particle accumulator and display having a closed chamber with a plurality of injection nozzles to provide a vortex flow within the chamber. An ejection nozzle is centrally located within the chamber at the end adjacent the injection nozzles. A flow stabilizer is positioned between the injection nozzles and the ejection nozzle. A particle extractor and stabilizer is attached to one end of the closed chamber and has a stabilizer hub and rotating end wall driven by a motor. The particle extractor and stabilizer includes a flow impeller, which communicates with an annular channel between the stabilizer hub and rotating end wall to withdraw the accumulated column of particles from the chamber.

3,771,292
AIR DRIER AND CLEANER

Norman V. Hamilton, and Ronald Lehoux, both of Timmins, Ontario, Canada, assignors to Hamlou Limited, Timmins, Ontario, Canada

Filed Apr. 14, 1971, Ser. No. 133,866
Claims priority, application Canada, Apr. 21, 1970, 80658
Int. Cl. B01d *45/12*
U.S. Cl. 55—345 **8 Claims**

Compressed air from a line is passed through a horizontal three-compartment casing in which the sense of swirl of the air is reversed from compartment to compartment, the swirling air passing through a screen which aids in separating water

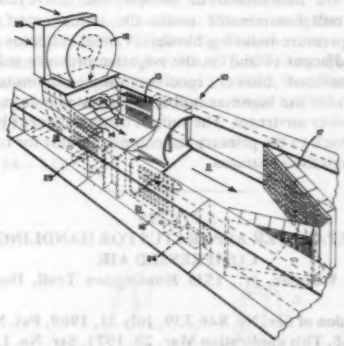


and other foreign matter, the air being returned to the line with its original sense of swirl.

3,771,293
LOUVER AIR CLEANER

Glenn E. Vest, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Dec. 6, 1971, Ser. No. 204,906
Int. Cl. B01d *45/08*
U.S. Cl. 55—319 **7 Claims**



An air cleaner system for use on diesel-electric locomotives requiring clean air for cooling electrical equipment, wherein contaminated atmospheric air is drawn into one end of an air duct, passed over louvered members located in the duct walls, and passed on to a filtering device which filters out the contamination and allows the cleaned air to circulate to the electrical equipment for the cooling thereof. Upon passing over the louvered members a portion of clean air is drawn therethrough by a low pressure area on their opposite sides, for use in cooling electrical equipment proximately located thereby, and the concentrated contaminated air is passed on for filtering and for cooling other electrical equipment.

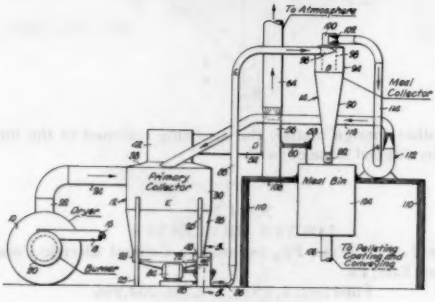
3,771,294
NEGATIVE PRESSURE FEEDER-SEPARATOR IN CLOSED LOOP PRODUCT GRIND AND DISCHARGING SYSTEM

Richard L. Ronning, Overland Park, Kans., assignor to Ronning Engineering Co., Inc., Overland Park, Kans.

Filed Nov. 23, 1970, Ser. No. 91,628
Int. Cl. B01d *45/12*
U.S. Cl. 55—345 **3 Claims**

A method and apparatus for processing an agricultural product utilizing a closed loop negative pressure system to convey the agri-product through the apparatus yet permitting ready removal thereof from the conveying loop at a selected

location. The undehydrated product is dried in a hot gas dryer and then conveyed under the influence of a negative pressure-inducing blower, into a frustoconical primary collector where the product, dust, and other light particles are separated from the conveying media. The primary collector-separator is maintained under a negative pressure by the aforementioned blower which also facilitates removal of the lighter foreign material. As a result of the frustoconical configuration of the collector-separator and its tangential material inlet and outlet,



superior separation is achieved and the agri-product and particulates are maintained in motion and conveyed into a hammer mill comminutor under the influence of another negative pressure-inducing blower. A meal collector which is located adjacent to and on the negative pressure side of the latter-mentioned blower receives the comminuted agri-product from the hammer mill and separates it from the adjacent blower airstream. The output of the adjacent blower is directed back to the primary collector-separator for recirculation through the apparatus.

3,771,295

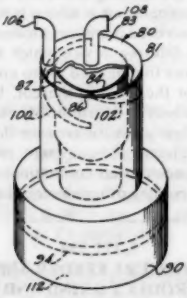
SEPARATER APPARATUS FOR HANDLING COMPRESSED AIR

Harry L. Wheeler, Jr., 1538 Huntingdon Trail, Dunwoody, Ga.

Division of Ser. No. 846,339, July 31, 1969, Pat. No. 3,653,465. This application Mar. 29, 1971, Ser. No. 129,264

Int. Cl. B01d *45/12*

U.S. Cl. 55—424 **7 Claims**



A compressed air filter comprising a tube in which there is an inner wall dfining an upper chamber which has its upper end closed by means of a plate that contains an inlet which opens into the chamber and there being a centrally located outlet which opens from said chamber. The inlet is adjacent to the inner wall and has a deflector means by which a mixture of air, solid particles oil and water droplets are moved downwardly in and to the upper chamber by swirling. There is an egg-shaped cylindrical tube attached to the plate which is approximately concentric within the inner wall and has a length greater than the wall defining a downward opening three-dimensional cylindrical annulus which varies across section containing the inlet opening so that incoming swirling mixture is accelerated in passing the narrowest point. A filter element is supported inside the egg-shaped cylinder which covers the outlet opening to filter solid particles in the mixture and a cylindrical tube which has its lower end closed by a plate. There is also a porous substance providing a filter means above a sump.

3,771,296

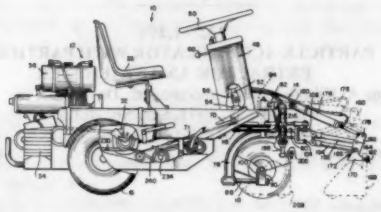
TURF MAINTENANCE MACHINE

Charles E. Sorenson, Mount Vernon; Clyde D. Stubblefield; Arnold A. DeBaillie, both of Evansville, all of Ind.; Robert K. Bramley, Cleveland, and Hugh A. Bourassa, University Heights, both of Ohio, assignors to Hahn, Inc., Evansville, Ind.

Filed Jan. 25, 1972, Ser. No. 220,629

Int. Cl. A01d *75/30*

U.S. Cl. 56—7 **31 Claims**



A turf maintenance machine comprising a vehicle having a front frame portion supported on a pair of wheels and a rear frame portion supported on a pair of drive wheels, said front frame portion being connected to the rear frame portion for pivotal movement relative thereto about a generally vertical steering axis. The two front wheels are mounted on the front frame portion for limited pivotal movement about an axis extending longitudinally of said machine and perpendicular to and below the rotational axis of the front wheels. A front, central reel is mounted on the front frame for pivotal movement relative to the front frame portion about a generally vertical axis spaced forwardly of said steering axis. A steering wheel is drivingly connected to the front frame portion by one transmission system and to the central reel by another transmission system such that the central reel turns relative to the front frame portion during steering to keep a generally constant overlap. Two side reels are connected to the front frame portion for pivotal movement therewith about said steering axis. The front reel and the side reels are mounted for pivotal movement about a forwardly and horizontally extending first axis as well as a laterally extending second axis perpendicular to the first axis to follow the terrain.

3,771,297

SWATHER DEVICE

Erval D. Jackson, Edgeley, N. Dak.

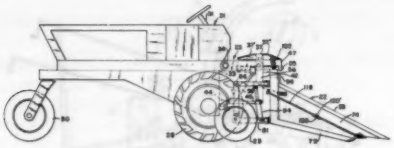
Filed May 26, 1972, Ser. No. 257,189

Int. Cl. A01d *55/28*

U.S. Cl. 56—15.2 **4 Claims**

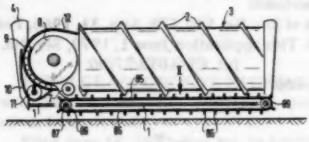
The invention comprises a self propelled swather. The swather has a tractor with a hydraulic operated parallel linkage mechanism mounted to the front thereof. A swather frame is pivotally mounted to the front of the parallel linkage to pivot from side to side about the pivotal mounting. Hydraulically operated leveling wheels are mounted to the outer ends of the swather frame and may be raised and lowered to level

the swather frame at the outer ends relative to the ground about the pivotal mounting. The swather frame also has dual



cutting blades which reciprocate toward and away from one and another from the cutting operation of the swather.

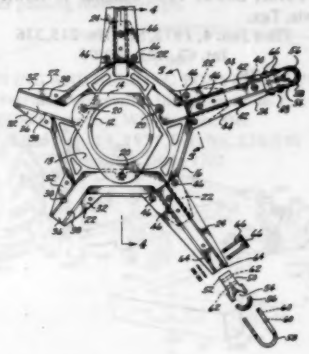
3,771,298
COMBINES
Helwig Schmitt, Raiffeisenstr. 5, Grebenstein, Germany
Filed Jan. 17, 1972, Ser. No. 218,336
Int. Cl. A01d *41/04*
U.S. Cl. 56—14.6 **13 Claims**



A combine structure comprising a conveyor cylinder located in spaced relation to a cutter bar wherein crops cut with a cutter bar is transported by the conveyor cylinder to a threshing cylinder by means of conveyor elements located on the external side or surface of the conveyor cylinder. The threshing cylinder may be adapted in the shape of a radial blower thereby serving not only to thresh the freshly harvested crop but also to direct a stream of air into additional conveyor elements located on the interior of the conveyor cylinder. The threshed crop is thereby transported to the interior of the conveyor cylinder where residual grain is separated therefrom and channeled accordingly. Additional conveyor elements are located on a table pan rearwardly on the cutter blade so as to aid in the delivery of the cut crop to the threshing cylinder.

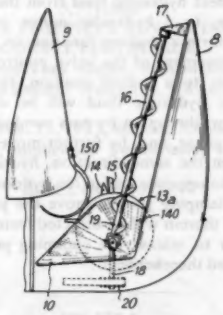
3,771,299
HARVESTING REEL
Donald R. Gradwohl, and Archie E. Neal, both of Garfield, Wash.
Division of Ser. No. 77,132, Oct. 1, 1970, Pat. No. 3,703,060.
This application June 5, 1972, Ser. No. 259,792
Int. Cl. A01d *57/02*
U.S. Cl. 56—220 **7 Claims**

A plurality of identical spiders are removably secured to an elongated, lightweight, thin walled center tube having good resistance to bending. Each spider comprises a hub member having short arm stubs and elongated arm section secured to the stubs. The arm stubs and the arm sections are of channel form in cross section, and each includes radially disposed web and gusset portions providing resistance to bending angularly of the reel and flanges of substantial depth providing resistance to bending axially of the reel. Bat support shafts are secured to the outer ends of the arms and tine carrying bats are secured to these shafts. The radial inner space between the



shafts and bats and the center tube is devoid of any truss structure which would interfere with the operation of the pick-up reel.

3,771,300
HARVESTING APPARATUS
Michel L. M. Jourdan, Coulimer, France, assignor to Societe Anonyme dite: Gustin Fils, Deville, France
Continuation-in-part of Ser. No. 175,837, Aug. 30, 1971, abandoned. This application Aug. 25, 1972, Ser. No. 283,807
Claims priority, application France, Sept. 4, 1970, 7032192; Mar. 1, 1971, 7106931
Int. Cl. A01d *45/02*
U.S. Cl. 56—119 **7 Claims**



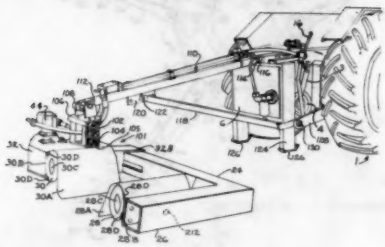
The present invention relates to apparatus for use with a tractor for lifting or harvesting and chopping vegetables e.g., maize, and delivering them to a trailer or other vehicle accompanying the tractor, the apparatus comprising a harvesting member having a pair of forwardly diverging plates adapted to receive the vegetables to be harvested and connected at their rear portions to a chopping and loading passage positioned transversely to the direction of advance of the tractor, said harvesting member being provided with a rotary cutting plate and with a cylindrical member integral therewith cooperable with a pressing or compacting member movable in the plane of said cutting plate towards and away from said cylindrical member so as to compact the vegetables thrust therebetween and orient said vegetables as desired within said plates for movement into said chopping and loading passage.

3,771,301

HYDRAULICALLY ACTUATED DEVICE FOR SHAKING TREES

Robert R. Favor, Bowie, Tex., assignor to Bowie Industries, Inc., Bowie, Tex.

Filed Jan. 4, 1972, Ser. No. 215,336
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 TS **4 Claims**



A vibrating device mounted on a movable frame, such as a tractor, so as to impart a vibrating motion to trees to dislodge fruit, nuts or seeds therefrom, which shaking may be of a low amplitude, to remove faulty or immature fruit, nuts or seeds, or to remove an excess of fruit, nuts or seeds from the tree, however, a later shaking action may be used to remove most or all of the fruit, nuts, seeds or the like in a harvesting operation. The present device is preferably mounted on a tractor having a powerlift hitch. A hydraulic pump is connected in driven relation with the mechanical power take-off of a tractor or the like, to furnish the power for a hydraulic pump to direct hydraulic fluid, under pressure, to the various elements of the tree clamping and shaking device. The tree clamping and shaking operations are performed by a single valve controlled by a lever, which lever, when moved in one direction, directs hydraulic fluid, under pressure, from a hydraulic pump to one end of a cylinder, to clamp a tree between the jaws of the tree shaking device, then a sequence valve is opened, by hydraulic pressure, to direct hydraulic fluid from the hydraulic pump, under pressure, to a hydraulic motor to drive eccentric weights to perform a shaking function on the tree clamped thereby. By movement of the valve control lever in the opposite direction, to a central position, the sequence valve closes and the hydraulic fluid will be diverted from the hydraulic motor, through a by-pass conduit, whereupon, the vibrations will cease, and, by further movement of the valve control lever in the same direction, hydraulic fluid will be directed into the opposite end of the hydraulic cylinder which actuated the clamping jaws to move the jaws apart and the hydraulic fluid therein will be directed from the opposite end of the cylinder to release the clamping jaws from the tree which is clamped therebetween.

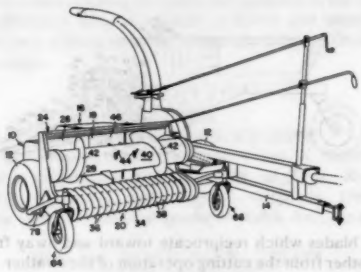
3,771,302

GAUGE WHEEL MOUNTING FOR A HARVESTER

James Lee Vogt, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed June 8, 1972, Ser. No. 260,986
Int. Cl. A01d *89/00*
U.S. Cl. 56—364 **6 Claims**

A forage harvester has a mobile main frame with a forward vertically adjustable subframe, which carries a forward windrow pickup unit, having a transverse rotary drum-type pickup with radial fingers which raise the crop from the ground as the machine advances to deliver it rearwardly to a transverse auger, which, in turn, converges the crop and propels it rearwardly through a crop transfer opening to a feeding mechanism in the harvester subframe. The weight of the pickup unit and the subframe is partly supported on a counterbalance spring between the main frame and the subframe and partly supported on a pair of gauge wheels, which are disposed on opposite sides of the pickup drum. Each gauge wheel is connected to the pickup unit by means of a transverse torsion bar having an inner end attached to the pickup unit inwardly of the side of the unit, the outer end of the torsion bar



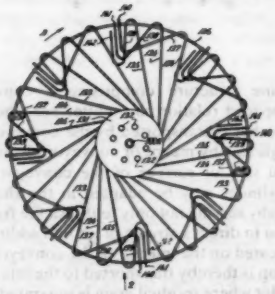
extending through a bearing means attached to the side of the pickup unit and being connected to a forwardly extending lever arm, the forward end of which is connected to the gauge wheel, so that the weight supported by the gauge wheel torsionally deflects the torsion bar.

3,771,303

DEVICE FOR WORKING CROP LYING ON THE GROUND

Cornelis Van der Lely, 7 Bruschenrain, Zug, Switzerland; Ary Van der Lely, 10 Weverskade, Maasland, Netherlands, and Cornelis Johannes Gerardus Bom, 36 Esdoornlaan, Rozenburg, Netherlands

Division of Ser. No. 576,279, Aug. 31, 1966, Pat. No. 3,559,389. This application June 1, 1970, Ser. No. 42,144
Int. Cl. A01d *77/00*
U.S. Cl. 56—400 **23 Claims**



A rake wheel that can be rotated about a non-horizontal axis having tines connected to the center of the wheel by torsionally deformable spokes. The deformable spokes are connected to a felly with the tine tips extending beyond the felly.

3,771,304

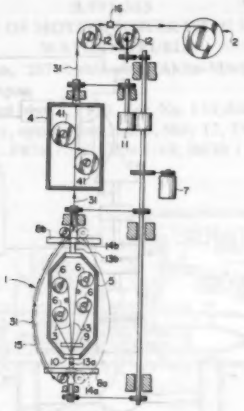
TWISTING MOTION AND PROCESS FOR PRODUCING WIRE CORDS

Kameo Taketomi; Tomoaki Katsumata; Norihisa Matsushima, and Masaari Yoneji, all of Itami, Japan, assignor to Sumitomo Electric Industries Ltd., Nigashi-ku, Osaka, Japan

Filed Mar. 16, 1972, Ser. No. 235,273
Claims priority, application Japan, Mar. 16, 1971, 46/14103
Int. Cl. D07b *3/00, 7/08;* **D02g** *3/48*
U.S. Cl. 57—58.57 **5 Claims**

This invention relates to twisting machine and process for producing wire cords particularly suitable for use in reinforcement of vehicle tires and other various articles of rubber or plastics. An over twister is provided between a rotating double twister adapted to twist together a plurality of wire elements, including pre-twisted wires, and a stationary take up means.

The over twister consists of rollers turning about a path of travel of the twisted wire cord in the counter direction to the rotation of the double twister at a speed of revolution sufficient so as to convert at least part of the elastic strain in the wire elements which has been imparted by the double twister,



to a corresponding permanent torsional strain, thereby improving the straightness of the finished wire cord and minimizing the tendency of the wire cord to become untwisted and curled as well as enabling higher speed production of twisted wire cords.

3,771,305

FIBER GLASS GROOVE PACKING

Irvin Barnett, Martinsville, N.J., assignor to Johns-Manville Corporation, Denver, Colo.

Filed June 15, 1972, Ser. No. 263,027

Int. Cl. D02g *3/18, 3/40*

U.S. Cl. 57—140 G **9 Claims**

A fiber glass rope packing comprises slivers of C-grade, K diameter staple glass fibers which are twined. The packing is at least 96% by weight staple glass fibers which fibers are impregnated with an anti-static and lubricating agent.

3,771,306

FIBRILLATION PROCESS

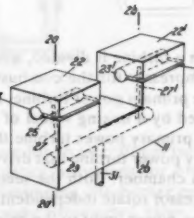
Henry S. Ostrowski, Charlotte, N.C.; John F. Roberts, and John G. Blacker, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 13, 1969, Ser. No. 849,672. The portion of the term of this patent subsequent to Mar. 13, 1988, has been disclaimed.

Claims priority, application Great Britain, Aug. 19, 1968, 39488/68

Int. Cl. D02g *3/06, 1/16*

U.S. Cl. 57—167 **7 Claims**



A method of fibrillating ribbon or tape, by subjecting the material to at least two fluid false-twisting means such that the direction of twist imparted to the material is completely reversed between adjacent false-twisting means. The material may be polyamide, polyester or mixture of these two and it may be heated prior to passing into the false-twist means and relaxed after passing therethrough.

3,771,307

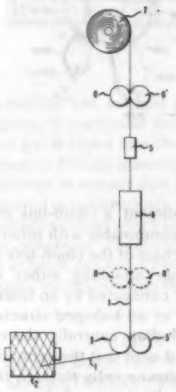
DRAWING AND BULKING POLYESTER YARNS

Dennis G. Petrille, Naperville, Ill., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 24, 1971, Ser. No. 174,430

Int. Cl. D02g *1/02*

U.S. Cl. 57—157 TS **2 Claims**



Textured polyester yarn is prepared from multifilament yarn by drawing at a draw ratio of 1.3 to 2.0, and false-twist texturing at temperatures above 200°C. in a continuous process. Preparation of the starting yarn by melt spinning at 3,000 to 3,500 yards per minute is illustrated.

3,771,308

DAY-DATE TIMEPIECE ADVANCING AND CORRECTING DEVICE

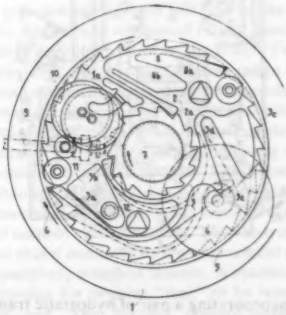
Gerald Visconti, and Theo Muller, both of Soleure, Switzerland, assignors to Roamer Watch Co., S.A., Soleure, Switzerland

Filed Feb. 15, 1973, Ser. No. 332,687

Claims priority, application Switzerland, Feb. 16, 1972, 2246/72

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **5 Claims**



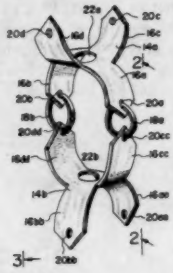
Day-date timepiece with unitary advancing pawls for day-date indicators with abutting means to lock one of the indicators with its respective pawl while the other indicator can be reset.

3,771,309

LIGHT-CORD-CONCEALING CHAIN DEVICE

Donald E. Peters, 81 Rustic Pl., Staten Island, N.Y.

Filed Mar. 21, 1972, Ser. No. 236,677
Int. Cl. F16g *15/14*
U.S. Cl. 59—78.1 **13 Claims**



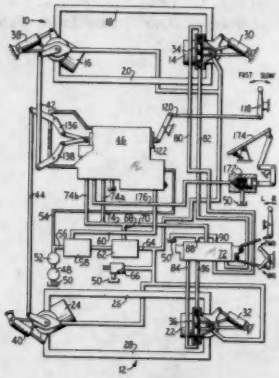
In a preferred embodiment, a chain-link element having a shape making it easily combinable with other such chain-link elements to produce a chain of the chain-link devices in linear series with one another attaching either directly to one another in the series or connected by an interconnecting link element such as a ring or an I-shaped structure, each of the chain-link devices including centrally thereof an aperture receivable of a light cord such that the light cord is extendable straight upwardly and downwardly through the center of the chain along the longitudinal axis of the series of interconnected chain-link devices.

3,771,310

HYDROSTATIC DRIVE CONTROL SYSTEM

John R. Cryder; Rodney R. Erickson; Kenneth R. Lohbauer, and James E. Scheidt, all of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 31, 1972, Ser. No. 222,041
Int. Cl. B62d *11/02*
U.S. Cl. 60—19 **8 Claims**



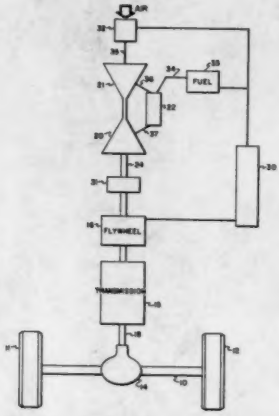
A vehicle incorporating a pair of hydostatic transmissions in the drive train is provided with a control system that automatically proportions engine horsepower between vehicle drive and vehicle implements. The control system is responsive to engine speed which is proportional to engine load to control transmission output.

3,771,311

POWER SYSTEM

Walter A. Herbst, Union, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Feb. 1, 1971, Ser. No. 111,279
Int. Cl. F02c *9/04*
U.S. Cl. 60—7 **9 Claims**



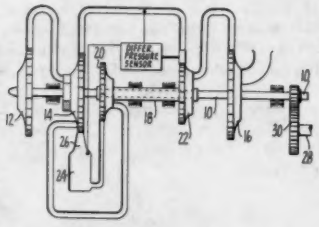
An improved power system is provided in which a gas turbine engine, mechanically connected to a flywheel, is adapted to power the flywheel whenever the flywheel falls below a preset standard rotational speed. The flywheel is adapted to deliver energy to power responsive motion producing means. Whenever the rotational speed of the flywheel exceeds a preset standard speed, the turbine engine is deactivated and the turbine wheel rotates freely with the flywheel enhancing its effectiveness.

3,771,312

AUTOMOTIVE TURBINE ENGINE

Richard E. Wirth, 1574 Melba Court, Mountain View, Calif., and Manfred N. Wirth, 1021 Heatherstone Way, Sunnyvale, Calif.

Filed Nov. 19, 1970, Ser. No. 91,092
Int. Cl. F02c *9/08*
U.S. Cl. 60—39.17 **6 Claims**



Gas flow through a turbine is divided, with part of the flow directed to the compressor for the combustion chamber and part directed to the primary power turbine. Division of the gas flow is accomplished by a mixing wheel of novel design. Before passing to the primary power turbine the gas flow passes through a secondary power turbine that drives the compressor for the combustion chamber. Both the secondary power turbine and the compressor rotate independently of the main turbine rotor shaft. The power input to the secondary power turbine is varied in accordance with the pressure differential between the gas pressure at the outlet of the compressor for the combustion chamber and the outlet from the mixing

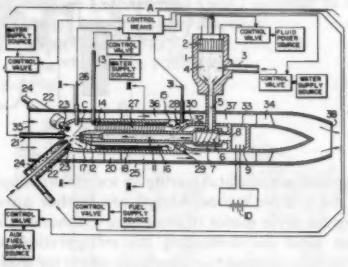
wheel. If the speed of the main turbine shaft slows down more power is put into the secondary power turbine and the combustion chamber compressor is speeded up so as to produce a higher gas pressure than would otherwise be the case.

3,771,313

GENERATION OF MOTIVE POWER WITH METAL AND WATER AS FUEL

Yoshiharu Kaibo, 287 Ushinuma, Akita-Machi, Nishitamagun, Tokyo, Japan

Filed May 3, 1971, Ser. No. 139,406
Claims priority, application Japan, May 12, 1970, 45/39727
Int. Cl. F02k *7/08;* **F23r** *1/18;* **B63h** *11/14*
U.S. Cl. 60—216 **14 Claims**



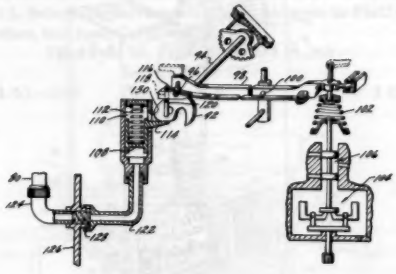
A metal such as aluminum, magnesium, or zinc in the form of granules of high fluidity is injected as a spray by high-pressure steam into a heated reaction chamber, and high-temperature steam is injected against this spray to cause exothermic reaction between the now molten metal and water, additional water being injected into the reaction system thereby to complete the reaction, to cause surplus water to be vaporized by the heat of reaction, and to generate high-temperature, high-pressure steam for motive power.

3,771,314

GAS TURBINE ENGINE EMERGENCY SPEED CONTROL SYSTEM

William W. Rose, Jr., and Walter D. Hutto, Jr., both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 4, 1971, Ser. No. 185,964
Int. Cl. F02k *1/12*
U.S. Cl. 60—223 **5 Claims**



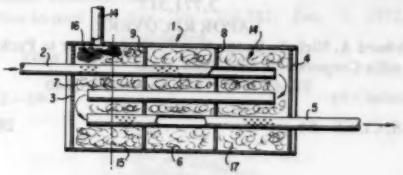
A control system for an aircraft gas turbine engine is shown to include emergency provisions for overriding the throttle position and discontinuing afterburner operation while setting engine speed at some preselected value. Two solenoid valves are included in the control system, one to deliver a servo signal to an "rpm lockup" device in the main fuel control and the other to interrupt a control signal to the afterburner fuel valve.

3,771,315

EXHAUST GAS PURIFIER

George H. Scott, 2635 Midlothian Pike, Apt. 19, Richmond, Va.

Filed Nov. 8, 1971, Ser. No. 196,373
Int. Cl. F01n *3/04*
U.S. Cl. 60—297 **5 Claims**



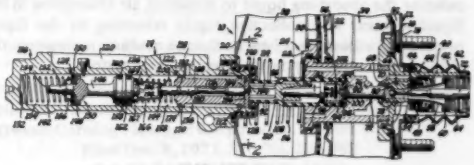
A combined muffler and exhaust gas purifier for internal combustion engines, in particular those for automotive vehicles. The exhaust gas is piped into the muffler casing which is filled with a porous or fibrous material, and repeatedly passed through such material to extract dust and other contaminants. The filtering material is continuously impregnated with an oxidizing and de-odorizing fluid which simultaneously with filtering, oxidizes or otherwise chemically treats dangerous ingredients of the exhaust gas and de-odorizes them. Automatically operated valve means controls the feeding of the fluid.

3,771,316

POWER BRAKE BOOSTER WITH NO-POWER OPERATIONAL FEATURES

Donald L. Nordeen, East Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 31, 1972, Ser. No. 258,249
Int. Cl. F15b *7/08, 13/10*
U.S. Cl. 60—550 **1 Claim**



A master cylinder assembly has a secondary piston assembly and a primary piston assembly mounted in a common bore to provide a primary pressurizing chamber between the piston assemblies and a secondary primary chamber between the secondary piston assembly and one end of the bore. The primary piston assembly is composed of two concentric pistons, one extending through a bore in the other. Two input members are provided, one of which is arranged to move both primary pistons concentrically under brake booster power to actuate the master cylinder, and the other of which is arranged to move only one of the primary pistons, without moving the other, to actuate the master cylinder manually when no power assist is available from the booster. The booster assembly is actuated through a manually moved push rod which in turn permits movement of a valve input member forming a part of the booster control valve assembly. The valve input member is arranged so that it normally follows movement of the push rod but is not positively attached thereto. A reaction system in the booster provides for booster "feel" to be transmitted to the input push rod. The booster control valve assembly is mounted in the booster power wall. The power wall includes one or more power diaphragms and is actuated by differential pressures imposed on opposite sides of the diaphragms under control of the control valve assembly. The power wall is connected to move the master cylinder input means which actu-

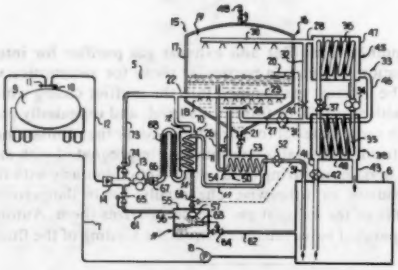
ates both primary pistons, and is so arranged as to permit movement of the other master cylinder input means without requiring movement of the power wall when no booster assist force is available.

3,771,317

VAPOR RECOVERY

Richard A. Nichols, Santa Ana, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Dec. 7, 1970, Ser. No. 95,640
Int. Cl. F17c *13/00*
U.S. Cl. 62—54 28 Claims



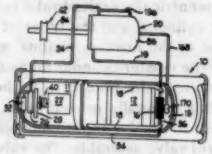
This disclosure relates to a vapor recovery system particularly adapted to recover volatile liquid vapors from a tank during the filling of a tank with the volatile liquid. The disclosure particularly relates to the operation of the vapor recovery system, particularly the absorber system thereof, at a low temperature whereby maximum efficiency can be obtained with low pressures. The absorber system is also improved by recirculating the absorbing liquid to minimize air absorption in the liquid stream. The collective liquid returning to the liquid reservoir is utilized as a heat exchange medium to improve the efficiency of other portions of the recovery system.

3,771,318

AUTOMOTIVE AIR CONDITIONING APPARATUS

Richard W. Roberts, Lombard, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 26, 1971, Ser. No. 202,280
Int. Cl. F25b *1/00*
U.S. Cl. 62—227 18 Claims



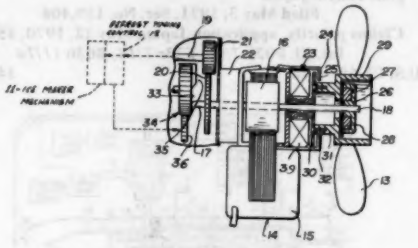
An air conditioning apparatus for an automobile including means for driving the compressor at a relatively constant speed, a control biasing this speed in accordance with the cooling load, and means for automatically disengaging the compressor drive when cooling is unnecessary.

3,771,319

UNITARY DRIVE FOR ICE MAKER MECHANISM, DEFROST MEANS AND AIR FLOW MEANS

Duane C. Nichols, and William J. Linstromberg, both of Evansville, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 30, 1971, Ser. No. 185,133
Int. Cl. F25c *1/04*
U.S. Cl. 62—233 10 Claims



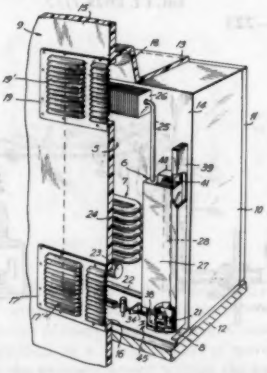
A refrigeration apparatus having an ice maker adapted to be operated by a drive motor. Means are further provided for permitting the drive motor to run in the manner of a clock for timing the need for defrosting the refrigeration apparatus while permitting intermittent operation of the ice maker under the control of a bin level switch. The apparatus further includes air flow means for flowing refrigerated air through the apparatus such as for freezing water in the ice maker to form ice bodies therein. The ice maker mechanism, defrost means, and air flow means are driven by a single drive member, herein comprising an electric motor.

3,771,320

REFRIGERATOR OPERATED BY A FLUID FUEL BURNER FOR A MOVABLE STRUCTURE

Karl Gosta Lennart Kenneryd, Vallingby, and Olov Tage Magnusson, Bromma, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Apr. 25, 1972, Ser. No. 247,418
Claims priority, application Sweden, Apr. 26, 1971, 5357/71
Int. Cl. F25b *15/00*; F23j *11/00*
U.S. Cl. 62—239 7 Claims



Heat-operated refrigeration apparatus has heat dissipating members and a heat receiving part in a space defined in part by an exterior vertical wall of movable structure, such exterior wall having first and second openings. The heat receiving part has a flue extending therethrough, the inlet of which receives heated products of combustion from a fluid fuel burner. Am-

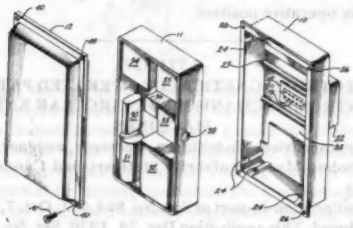
bient air passes into the space through the first wall opening, a part of which flows upwardly in the space to effect cooling of the heat dissipating members and another part of which provides combustion supporting air for the burner. Heated flue gases from the outlet of the flue, together with air effected to cool the heat dissipating members, is discharged exteriorly of the movable structure from the space through the second opening. A by-pass connection is provided around the flue between its inlet and outlet which prevents the burner flame from being extinguished due to an abnormally high difference in pressure of ambient air outside the movable structure at the first and second wall openings.

3,771,321

MODULAR AIR CONDITIONING EQUIPMENT

Edward W. Maksy, Los Angeles, Calif., assignor to Climate Control Systems, Inc., Baldwin Park, Calif.

Filed Oct. 4, 1972, Ser. No. 294,919
Int. Cl. F25d *19/00*
U.S. Cl. 62—298 **10 Claims**



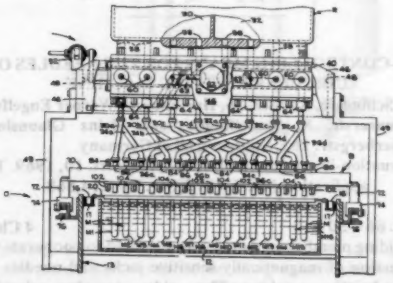
In air conditioning equipment having a compressor motor, a fan motor, and electrical circuitry for controlling the operation of the compressor and fan motors, a removable module fits into a stationary housing. The housing has a female connector with terminals electrically coupled to the compressor and fan motors, and the module has a mating male connector with terminals electrically coupled to the circuitry. Preferably, the housing has sides with guide rails that form a force fit with the sides of the module and form a space between the module and the housing for insertion of a module removal tool. The tool has a pair of fingers that embrace opposite sides of the module and move inwardly responsive to hand pressure to engage holes in the sides of the module. A test module contains an ohmmeter and a male connector.

3,771,322

MANIFOLDING FOR FROZEN CONFECTION MACHINE

Robert J. Betschart, Sacramento, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 24, 1971, Ser. No. 118,268
Int. Cl. F25c *7/04*
U.S. Cl. 62—345 **1 Claim**



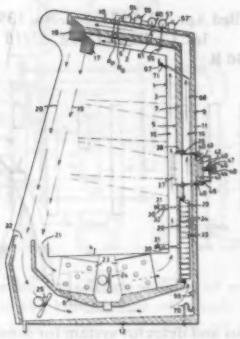
An indexed conveyor carries transverse rows of molds beneath a manifold block. The manifold block is connected by hoses to a pair of dispersing units each of which has two reservoirs. Thus a fill pattern of four different flavors can be set up for each row of molds.

3,771,323

REFRIGERATED REACH-IN DISPLAY COMPARTMENT

Edward Widman Simons, Mill Valley, and Edward Warren Simons, San Francisco, both of Calif., assignors to Dualjet Corporation, Tiburon, Calif.

Continuation-in-part of Ser. No. 214,702, Jan. 3, 1972, abandoned.
Filed May 17, 1972, Ser. No. 254,225
Int. Cl. F25d *17/06*
U.S. Cl. 62—89 **18 Claims**



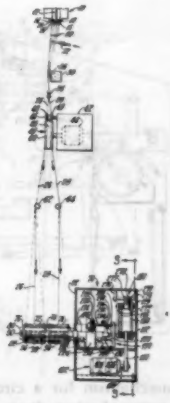
A compartment having one open side and inner walls extending to opposite edges of said open side around the area to be refrigerated which inner walls define the walls of a first conduit for conducting refrigerated air from an inner inlet along one of said opposite edges of said open side to an inner discharge nozzle along the edge opposite thereto for forming a curtain of primary or refrigerated air across said open side between said nozzle and said inlet.

3,771,324

METHOD OF AND APPARATUS FOR PROCESSING LINEAR ELEMENTS

Jerome P. Klink; Alex P. Symborski, both of Gransville, and Norman R. Shape, Columbus, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 8, 1971, Ser. No. 206,008
Int. Cl. B65h *54/02*; C03b *37/02*
U.S. Cl. 65—11 W **27 Claims**



Method of and apparatus for collecting linear material including means for feeding linear material, a driven rotatable

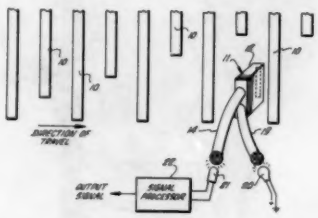
collector, means for supplying a control signal having a patterned rate of change that is arranged to change the angular speed of the collector during package build-up to cause the collection speed of the linear material generally to approach the feed speeds and means effective in response to the sensed speed differences to change the patterned rate of change of the control signal to bring the collection speed of the linear material into matched relationship with the actual feed speed of the material.

3,771,325

ELEMENT POSITION DETECTOR SYSTEM

James S. Sweeney, Laguna Beach; George A. Dyer, San Juan Capistrano, and Ronald G. Johnson, Anaheim, all of Calif., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Apr. 30, 1971, Ser. No. 139,104
Int. Cl. D04b *15/78, 35/18*
U.S. Cl. 66—50 R **2 Claims**



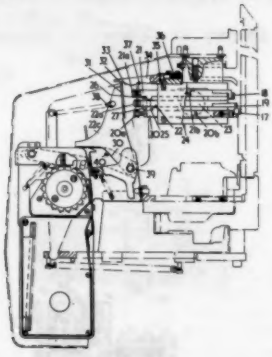
An apparatus and detector system for sensing whether moving element of a series of elements are in a selected position which apparatus comprises sensor means mounted adjacent the path of travel of the series of elements, the sensor means being capable of projecting and receiving light, means for converting received, reflected light into a voltage pulse and means, including selected gating, for comparing the voltage pulse with other command or related derived signals.

3,771,326

PATTERNING MECHANISM FOR CIRCULAR KNITTING MACHINES

Ernest Leonard Farmer, and Dennis William Whitmore, both of Leicester, England, assignors to Wildt Mellor Bromley Limited, Aylestone, Leicester, England

Filed Mar. 12, 1971, Ser. No. 123,591
Claims priority, application Great Britain, Mar. 24, 1970, 14,245/70
Int. Cl. D04b *15/74*
U.S. Cl. 66—50 R **8 Claims**



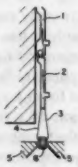
A patterning mechanism for a circular knitting machine having a stack or series of rotary discs, or other peripheral formations. These peripheral formations are present or absent according to a predetermined pattern and are co-operable with a single patterning butt on each of a series of presser elements which each have a series of height selection butts. These height selection butts cause the presser elements to raise and lower so that the patterning butts of the presser elements are co-operable with selected discs or rows of the stack or series characterized by at least one height selection station for the presser members. Each height selection station includes at least a butt rising cam and a butt lowering cam each mounted on a separate operating element for movement in or out of the path of height selection butts on the presser members. Latch means or spring loaded pivotally mounted latching member is provided for latching the operating element in the operative position with its cam in the path of the height selection butts until positive release of the latch means. The latching member has a shoulder which engages a selected bell crank, which bell crank actuates a selected operating element, when the selected bell crank is in a forward position to maintain the selected operating element in the operative position. When the latching member is released, a second selected bell crank becomes operative and forces the latch out of engagement with the first selected bell crank, thus allowing the first selected bell crank to retract from the selected operating element which in turn allows the opeating element to retract from the operative position.

3,771,327

ELECTROMAGNETICALLY-OPERATED PATTERN CONTROL MECHANISM FOR CIRCULAR KNITTING MACHINES

Werner Engelfried, Sindelfingen, Germany, assignor to C. Terrot Sohne Maschinenfabrik, Stuttgart-Bad Cannstatt, Germany

Continuation-in-part of Ser. No. 864,402, Oct. 7, 1969, abandoned. This application Dec. 24, 1970, Ser. No. 101,260
Claims priority, application Germany, Oct. 16, 1968, P 18 03 296.7; Jan. 8, 1970, P 20 00 578.1
Int. Cl. D04b *15/78*
U.S. Cl. 66—50 R **7 Claims**



An electromagnetically-operated pattern control mechanism for circular knitting machines, said machines having needles and mechanical control parts such as needle jacks, the needles and jacks being swingably connected together, the jacks are each provided with a pair of generally similar opposed springs each one of which may be controlled mechanically as well as electromagnetically, at least one of the springs of the spring pair is operated in a pattern controlling manner by at least one electromagnet of an electromagnet pair.

3,771,328

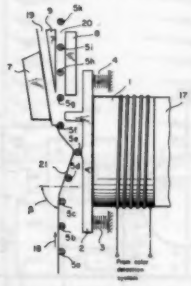
JACK-CONTROLLING MEANS FOR THE NEEDLES OF A CIRCULAR KNITTING MACHINE

Alfred Schindele, Karlstr. 36, Harthausen; Werner Engelfried, Weimarerstr. 8, Sindelfingen, and Heinz Glaunsinger, Zuckerbergstr. 161, Stuttgart, all of Germany

Continuation-in-part of Ser. No. 865,402, Oct. 10, 1969. This application Jan. 3, 1972, Ser. No. 214,868
Int. Cl. D04b *15/78*
U.S. Cl. 66—50 R **4 Claims**

A guiding member is operatively mounted to cooperate with a succession of magnetically-sensitive jacks and needles of a circular knitting machine. The guiding member selectively urges the jacks either into an inner or an outer track of the circular knitting machine which respectively represent a non-knitting and knitting position of the respective jack and needle

as they move around the circumference of the circular knitting machine. A guiding member is inwardly biased and is adapted to coact with the armature of an electromagnet. The guiding member has a projection which extends radially inwardly towards the center of the cylinder of the circular knitting machine. The guiding member also has a boss which is obliquely interposed in the path of movement of the jacks when the guiding member is in its inner position. In the inner position, the projection of the guiding member urges the jacks away from the outer track and into the inner track. As each



jack engages the interposed boss of the guiding member, the latter is cammed outwardly against its bias thus moving the projection thereof outwardly so as to expose the outer track. When the outer track is thus exposed and the jacks move through this outer track the circular knitting machine is carrying out a patterned knitting operation. The electromagnet can be selectively energized thereby urging the guiding member into its outer, biased position and exposing the outer track of the knitting machine thereby causing a patterned knitting operation. When the electromagnet is not energized, the projection of the guiding member will move inwardly and thereby mechanically urge the jacks to move through an inner track wherein the knitting needles cannot carry out a patterned knitting operation.

3,771,329

ADJUSTING DEVICE FOR THE TIGHTNESS OF THE KNITTING ON KNITTING MACHINES

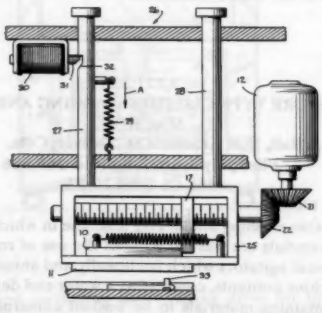
Erich Krause, Bopfingen, Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber G.m.b.H., Westhausen, Germany

Filed Jan. 31, 1972, Ser. No. 222,067

Claims priority, application Germany, Mar. 10, 1971, P 21 11 553.7

Int. Cl. D04b *7/00, 13/36, 35/00*

U.S. Cl. 66—78 **6 Claims**



Knitting machine needle cam adjusting arrangements wherein a transport nut is moved along a shaft which is turned by a motor which also moves a potentiometer element forming a part of a bridge circuit which controls the motor to one of several optionally selectable positions. The transport nut is arranged to engage a stop on which a spring biased needle cam is mounted, to set the cam position.

3,771,330

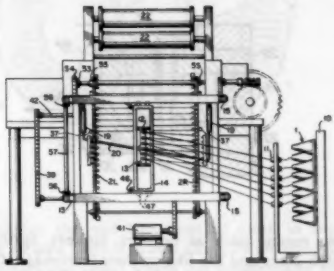
APPARATUS FOR FEEDING FILLING THREADS TO A WARP KNITTING MACHINE

Alexander J. Carman, Athens, Ga., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 867,524, Oct. 20, 1969, Pat. No. 3,699,783. This application July 27, 1972, Ser. No. 275,654

Int. Cl. D04b *23/12*

U.S. Cl. 66—84 A **5 Claims**



A feed mechanism for feeding lengths of weft thread on chains carrying to the knitting line of a weft inserted warp knitting machine is described. The chains are provided with conventional clamping thread transfer pins. A plurality of yarns from stationary yarn packages are mounted in a line parallel to the direction of the movement of the weft carrier chains. The yarns from the packages are led to a frame which oscillates from one carrier chain to the other, thus stringing the multiple yarns across and laying them parallel to each other. There are two variants for the frame, in one of which the frame has an inner frame which moves vertically, whereas the outer frame oscillates horizontally across, thus producing a figure-eight path for the yarn. The second variant has a much larger number of yarns, and the frame oscillates horizontally, with no inner frame.

3,771,331

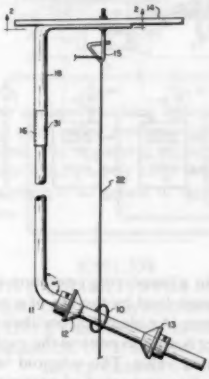
DANCING RING ASSEMBLY FOR KNITTING MACHINES

Eugene Piersimoni, Peckville, Pa., assignor to Sauquoit Fibers Company, Scranton, Pa.

Filed May 7, 1971, Ser. No. 141,189

Int. Cl. D04b *15/44, 27/12, 35/00*

U.S. Cl. 66—146 **6 Claims**



An apparatus for use on knitting machines to guide yarn off of packages and prior to knitting including an attachment to

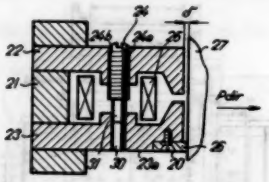
the knitting machine having thereon an inclined rod or pair of rods with a ring thereon which, while retained on the rods, may move freely thereon.

3,771,332

APPARATUS FOR SEPARATELY CONTROLLING KNITTING MEANS

Jaroslav Knourek; Oldrich Kouril, and Vladimir Mureso, all of Brno, Czechoslovakia, assignors to Vyzkumny a vyvojovg ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed Nov. 30, 1971, Ser. No. 203,204
Int. Cl. D04b *15/66*
U.S. Cl. 66—154 A **3 Claims**



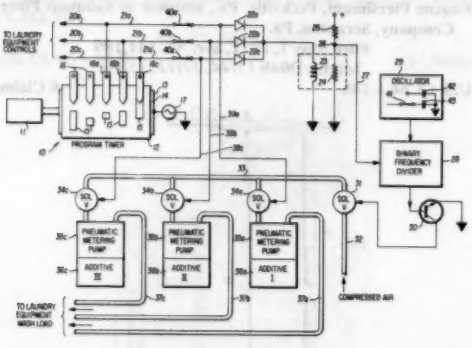
Knitting means such as needles, sinkers, springs, raising cams, stitch cams and the like or their ferromagnetic portions are separately controlled in a knitting machine by an apparatus comprising a permanent magnet having two pole pieces extending therefrom. An adjustable magnetic shunt in the form of a stepped diameter adjusting screw bridges the pole pieces and is surrounded by an electrical coil. The coil is electrically coupled with the electronic control apparatus of the knitting machine. A spacing shim may be provided on one pole piece to produce and maintain a desired air gap between the pole pieces and the knitting means.

3,771,333

PROGRAMMABLE CONTROL OF THE INJECTION OF ADDITIVES IN A LAUNDERING OPERATION

Ojars Jurjans, Camden, N.J., assignor to Jetronics Industries, Inc., Philadelphia, Pa.

Filed July 25, 1972, Ser. No. 275,043
Int. Cl. D06f *33/02, 39/02*
U.S. Cl. 68—12 R **12 Claims**



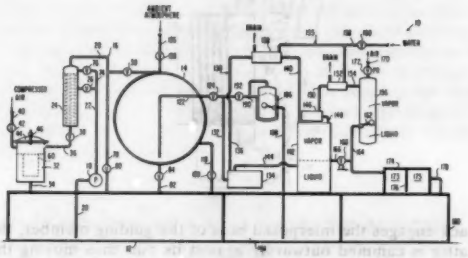
Additives used in a laundering operation are automatically injected into the wash load by the use of a programmed electro-pneumatic system. An electrical oscillator means operated by a program timer is used to control the cyclical opening and closing of a solenoid valve. The solenoid valve functions to control the application and relief of pneumatic pressure to a plurality of additive pneumatic metering pumps, and additional solenoid valves also operated by the program timer determine which of the metering pumps are actuated by the cyclical pneumatic pressure pulses obtained from said cyclically operating valve.

3,771,334

DRY CLEANING MACHINE

Henry Quackenbush, 1461 S. Broad St., Mobile, Ala.

Filed Sept. 29, 1971, Ser. No. 184,700
Int. Cl. D06f *43/08*
U.S. Cl. 68—18 C **15 Claims**



A dry cleaning machine is disclosed, including a storage tank for storing a supply of liquid cleaning solvent, a cleaning chamber for receiving articles to be cleaned and a fluid communication means, including a filter, for transferring liquid solvent from the storage tank to the chamber. The machine also includes means for periodically removing impurities from the filter comprising a trap connected to the filter via a normally closed first valve and having a removable cover. A foraminous bucket is disposed within the trap and is removable therefrom when the cover is removed from the trap. A source of compressed gas is connectable to the trap via a normally closed second valve. Also, means are connected between the fluid communication means and the filter for backwashing the filter with liquid solvent from the storage tank. After each wash cycle, the first valve is opened and the filter backwashed to flush impurities in the filter into the trap where the impurities are retained in the bucket. Thereafter the first valve is closed, and the second valve is opened to admit compressed gas into the trap to squeeze liquid solvent from the impurities retained in the bucket. The second valve is then closed. Periodically the cover is removed from the trap so that the bucket may be removed therefrom and the impurities retained in the bucket discarded.

3,771,335

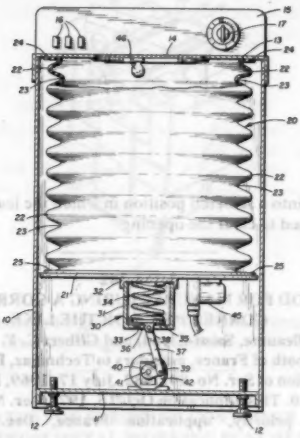
PRESSURE TYPE CLOTHES WASHING AND DRYING MACHINE

Russell J. Hall, 1530 Krameria St., Denver, Colo.

Filed July 3, 1972, Ser. No. 268,836
Int. Cl. D06f *29/02*
U.S. Cl. 68—21 **1 Claim**

A clothes washing and drying machine in which clothes and other materials are washed without the use of rotary or other mechanical agitators which frictionally and abrasively contact the machine contents, comprising a water and detergent reservoir containing materials to be washed constructed to intermittently pressurize the contents and thereby exert squeezing and agitating action on the clothes and other materials. The reservoir has flexible side walls capable of expansion and compression, whereby the contents are alternately pressurized and relieved, causing turbulence of the water and detergents and

thorough cleansing of the materials being washed. The compression and expansion of the reservoir side walls are



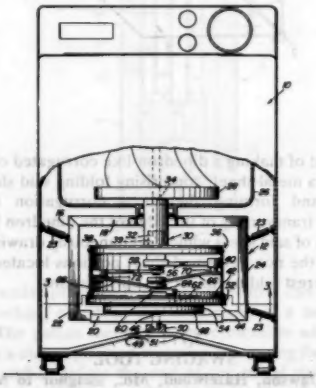
produced by a motor driven cam which transmits bearing pressure on the reservoir bottom to impart bellows-like movement to the said walls.

3,771,336

WASHER AGITATOR AND SPIN TUB DRIVE ASSEMBLY

Robert E. Phillips, Jr., Baton Rouge, La., assignor to James M. Perrier, Sr., Harahan, La.

Filed Jan. 21, 1972, Ser. No. 219,760
Int. Cl. D06f *21/00, 29/00, 33/00*
U.S. Cl. 68—23.7 **6 Claims**



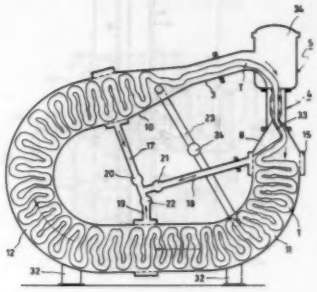
A combined oscillating and rotating drive for the center agitator and spin tub, respectively, of a washing machine including an orbital input shaft and connecting and linking rods operative to inversely oscillate the tub and agitator of a washer during the wash cycle and to simultaneously rotate both the agitator and the tub in the same direction during the spin cycle without the use of any gearing.

3,771,337

APPARATUS FOR THE WET TREATMENT OF CLOTHS

Isidro Folch Trullas, Tarrasa, Spain, assignor to Argelich Termes yC[a], Tarrasa, Spain

Filed Dec. 8, 1971, Ser. No. 205,943
Int. Cl. B05c *11/124*
U.S. Cl. 68—178 **22 Claims**



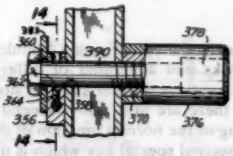
Apparatus for the wet treatment of cloth in rope form wherein the treated cloth is drawn along by the treating liquor inside the treatment vessel which has substantially the shape of a right-angled triangle with unequal legs and rounded apexes and in which the liquid is pumped into the vessel through jet means housed in the vertical leg of said rightangled triangle, which leg has as an extension a cylindrical dome through which the cloth is introduced into the vessel.

3,771,338

OFFICE MACHINE ANTI-THEFT LOCKING APPARATUS

Archie Raskin, Englewood, N.J., assignor to Componentry Research and Development Enterprises, Inc., Great Neck, N.Y.

Continuation-in-part of Ser. No. 73,881, Sept. 21, 1970, Pat. No. 3,664,616. This application May 22, 1972, Ser. No. 255,624
Int. Cl. E05b *73/00*
U.S. Cl. 70—58 **14 Claims**



Office machine anti-theft locking apparatus for preventing the illicit removal of an office machine such as a typewriter or an adding machine. The apparatus includes means to which the office machine is secured by bolts with said means being designed so that there is no access to the bolts which secure the office machine.

3,771,339

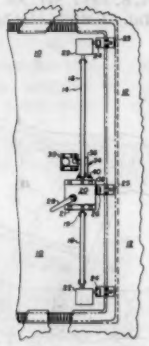
PROTECTIVE APPARATUS FOR DOOR LOCKS EMPLOYING LATCH-RODS

Elmer R. Smith, 1275 B Oakdale Ave., El Cajon, Calif.

Filed Jan. 24, 1972, Ser. No. 220,028
Int. Cl. E05b *63/14*
U.S. Cl. 70—118 **2 Claims**

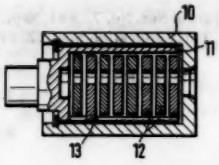
Protective mechanism for door locks employing hand-operated latch-rods extending to engage opposite sides of a

door frame, the latch-rods being secured in position by a combination lock or the like; the protective mechanism designed



to absorb the force to prevent damage to the combination lock when the bolt-rods are manipulated in a locked position during a security sweep or the like.

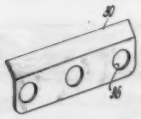
3,771,340
LOCK SYSTEM
Paul Krakstrom, Helsinki, Finland, assignor to Oy Wartsila Ab, Helsinki, Finland
Filed Apr. 19, 1971, Ser. No. 135,171
Int. Cl. E05b *25/02, 35/08*
U.S. Cl. 70—338 **8 Claims**



A lock arrangement comprising a cylinder lock with turnable locking disks and a number of different keys. One or several of the keys are normal keys for normal operation of the lock, but there are also a first special key by means of which a locking of the normal function of the lock can be obtained, and a second special key which is used to release this locking. The first special key is provided with means for turning a number of the locking disks into one turning direction and for bringing a smaller number of the locking disks back into their initial position, thereby leaving the return of at least one locking disk incomplete. The incompletely returned locking disk forms an obstacle in the keyway of the lock and prevents proper insertion of the normal key.

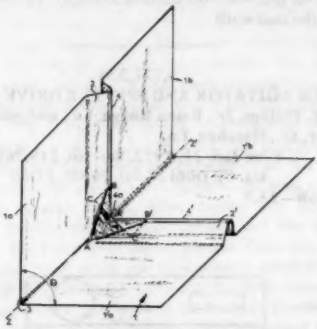
3,771,341
KEY RETAINER
Berek Laufer, 390 Ocean Pky., Brooklyn, N.Y.
Filed Jan. 26, 1972, Ser. No. 220,736
Int. Cl. A44b *15/00*
U.S. Cl. 70—456 B **4 Claims**

A novel key retaining means provided with a leaf spring mounted within the hollow portion of a key ring stem holder. The holder has at least one stem receiving opening normally blocked by the spring to prevent accidental removal of the stem after its insertion. Removal of the stem is effected by



moving it into a selected position in which the leak spring may be depressed to clear the opening.

3,771,342
METHOD FOR MANUFACTURING A CORRUGATED CORNER PIECE OR THE LIKE
Jean H. Alleaume, Saint-Cloud, and Gilbert C. F. Fournier, Le Havre, both of France, assignors to Technigaz, Paris, France
Division of Ser. No. 842,482, July 17, 1969, Pat. No. 3,686,920. This application Oct. 15, 1971, Ser. No. 189,574
Claims priority, application France, Dec. 31, 1968, 68182929
Int. Cl. B21d *13/02*
U.S. Cl. 72—379 **3 Claims**

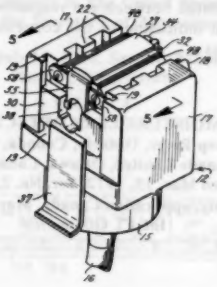


A method of making a dihedron-like corrugated corner element from a metal sheet, comprising folding said sheet into a dihedron and forming therein a corrugation extending throughout transversely of the edge of the dihedron by driving in a portion of said sheet while simultaneously drawing near to each other the non-deformed sheet portions located on each side of the crest folding line of the corrugations.

3,771,343
SWAGING TOOL
James A. Dawson, Hazelwood, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.
Continuation of Ser. No. 28,578, April 15, 1970, abandoned. This application Mar. 24, 1972, Ser. No. 237,990
Int. Cl. B21d *41/00*
U.S. Cl. 72—402 **7 Claims**

A swaging tool for joining the ends of a number of tubes by a coupling member that may be a straight sleeve, an elbow, a tee, a cross, or some other configuration, said tool comprising swaging elements normally loosely mounted when in open position for receiving the members to be joined, and force

supplying means acting substantially simultaneously on the die elements to move the die elements relative to each other and



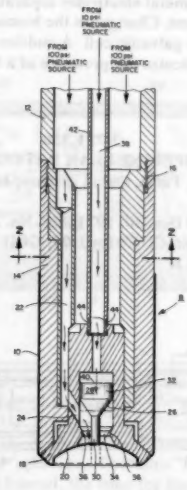
to the members to be joined so as to circumferentially enclose and radially inwardly swage the members.

3,771,344

APPARATUS FOR STRIPPING CONTAINER BODIES FROM METAL WORKING PUNCHES

George W. Wright, Willingboro, N.J., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed Oct. 30, 1972, Ser. No. 302,480
Int. Cl. B21d *45/00*
U.S. Cl. 72—345 **11 Claims**



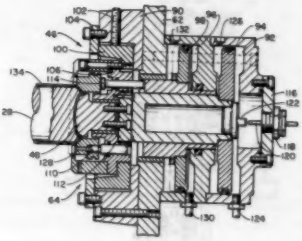
Fluid under pressure is utilized to strip a can body from a metal working punch at the conclusion of a metal working stroke. The punch includes a valve member which is maintained in a closed position covering a stripping fluid outlet in a valve chamber before the end of the metal working stroke. The valve member is maintained in the closed position by a pneumatic bias applied to the end of the valve member opposite the end of the punch. At the conclusion of the metal working stroke, the can body is domed upwardly toward the valve member so as to engage a projection extending from the valve member thereby forcing the valve member away from the end of the punch and opening the outlet in the valve chamber. This permits the stripping fluid to pass through the valve chamber outlet into contact with the interior of the container body thereby stripping the body from the punch.

3,771,345

END FORMING STATION FOR METALLIC CAN BODY FORMERS AND THE LIKE

Elpidifor Paramonoff, Los Angeles, Calif., assignor to Standun, Inc., Compton, Calif.

Filed June 8, 1972, Ser. No. 261,043
Int. Cl. B21d *22/28*
U.S. Cl. 72—349 **8 Claims**



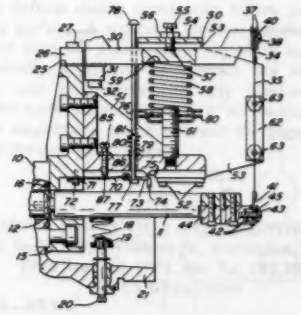
A doming station for a can body former of the type having a reciprocal ram carrying a metallic can body to and from the doming station for reforming the can body end has a doming die urged to a forward working position by compressible means such that under malfunctioning in which more than one can body is on the can end, the added force will permit the doming die to move rearwardly avoiding damage thereto. An edge forming die ring may be separately similarly mounted telescoping the doming die. A movable frame portion mounts the doming die and is pivotal to and from extending transversely across the ram path of movement. A securing part thereof is movable rectilinearly transversely into a final working position when pivoted into transverse position. In final working position, pressure screws are tightened to exert axial pressure between the movable frame and stationary frame portions to rigidify in the final working position.

3,771,346

CALIBRATING DEVICES

Theodore J. Huslin, Jr., Richboro, Pa., assignor to Moore Products Co., Spring House, Pa.

Filed June 21, 1972, Ser. No. 264,886
Int. Cl. G01l *25/00*
U.S. Cl. 73—1 B **7 Claims**

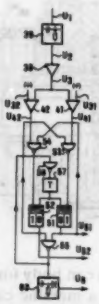


Structure is disclosed for applying a predetermined force for calibrating an instrument of the force bar type which controls the vibration of a tension element whose tension is related to an input force applied on the force bar, the calibrating force applying structure including a spring urged member selectively applying a predetermined force on the force bar.

3,771,347
APPARATUS FOR ANALYZING THE MOVEMENT OF A TIMEPIECE REGULATING MECHANISM

Albert Schar, Lotzwil, Switzerland, assignor to Greiner Electronic AG, Langenthal, Switzerland

Filed June 2, 1972, Ser. No. 259,316
Claims priority, application Switzerland, June 3, 1971, 8068/71
Int. Cl. G04b *17/00*
U.S. Cl. 73—6 **4 Claims**

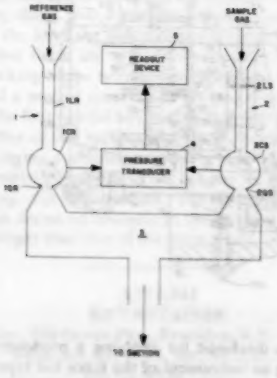


Method and apparatus for measuring the quantity of movement of the regulating mechanism of a timepiece, characterized in that the light beam of an optical system is arranged for partial interception by the edge portion of the pallets means of the regulating mechanism when said pallets means are in at least one end position of travel, whereby said light beam is intensity-modulated during oscillatory travel of the pallets means to produce a generally trapezoidal signal voltage (U_1). Circuit means are provided for processing said signal voltage to provide output voltages (U_{41}, U_{42} and/or U_{51}, U_{52}) that are a function of the flank portions of said trapezoidal signal voltage when said pallets means are in the end positions of travel, respectively.

3,771,348
ANALOG FLUERIC GAS CONCENTRATION SENSOR

Fernando Villarroel, Bowie, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 28, 1972, Ser. No. 229,940
Int. Cl. G01n *31/00*
U.S. Cl. 73—23 **10 Claims**



A flueric gas concentration sensor consisting of two identical flow channels exhausting to a common output chamber is described. A reference gas is introduced into one of said flow channels and an unknown sample gas is introduced into the other. Both gases are drawn through the respective channels by a suction unit connected to the common output chamber. Each respective flow channel consists of one linear flueric resistor, one small cavity, and one quadratic flueric resistor. The pressure differential between the respective small cavities is measured as an indication of the concentration of the unknown sample gas.

3,771,349
MOISTURE LEAK DETECTOR

Eiji Yatabe, Deep River, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada

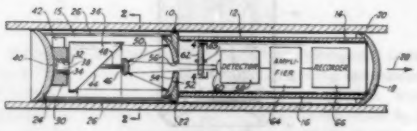
Filed Mar. 15, 1972, Ser. No. 234,842
Claims priority, application Canada, May 31, 1971, 114373
Int. Cl. G01m *3/04*
U.S. Cl. 73—29 **5 Claims**

A portable moisture leak detector comprising a galvanic cell disposed in an elongated tubular member through which the air to be sampled is drawn. The galvanic cell comprises a pair of dissimilar metal electrodes separated by a deliquescent electrolytic element. Changes in the humidity change the electric output of the galvanic cell. A sudden increase in the output of the cell indicates the presence of a leak enabling it to be located.

3,771,350
PIPELINE LEAK DETECTOR

Gleason Romans, Tulsa, Okla., assignor to Aviation, Inc., Tulsa, Okla.

Filed Dec. 30, 1971, Ser. No. 213,984
Int. Cl. G01m *3/04*; G01t *1/16*
U.S. Cl. 73—40.5 R **7 Claims**

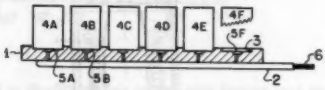


A pipeline leak detector comprising a cylindrical housing which is propelled through a pipeline by the flow of fluid therein. An infra red scanning means disposed in the housing for collecting infra red emission from the inner walls of the pipe, an optical focusing means in communication with the scanning means for focusing the infra red emission on a cryogenically cooled detector which is also disposed within the housing. Converter means converts the infra red emission into an electrical voltage which is directly proportional to the frequency of the emission. A continuous recording means is operably connected to the detector means for recording the voltage output thereof, whereby the temperature differential caused by fluid escaping from a pipeline leak is recorded for subsequent determination of the location of the leak.

3,771,351
METHOD AND APPARATUS FOR DETECTING SPOILAGE

Lawrence E. Sacks, Berkeley, and Emory Menefee, Richmond, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed July 10, 1972, Ser. No. 270,426
Int. Cl. G01n *25/48*
U.S. Cl. 73—52 **6 Claims**

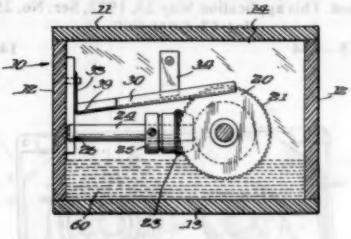


System for non-destructive detection of spoilage in sealed containers of food or other perishable commodities. The invention utilizes the principle that growth of spoilage organisms is accompanied by an evolution of heat.

3,771,352
TEST APPARATUS AND METHOD

Donald L. Powell, Chicago, and Roy J. Pustelnik, Tinley Park, both of Ill., assignors to Autoresearch Laboratories Incorporated, Chicago, Ill.

Filed Jan. 12, 1972, Ser. No. 217,144
Int. Cl. G01n *11/06, 33/30*
U.S. Cl. 73—54 **11 Claims**



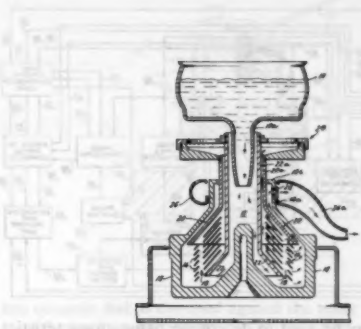
An apparatus and method of evaluating the fluidity of lubricating oils picks up oil from a sump by a rotating gear and deposits portions of the same on an inclined channel. The oil flows down the inclined channel and returns to the sump through a restricted aperture. The time for the oil to be deposited upon the channel, the time for the oil to flow down the channel, and the time for the oil to flow through the restricted aperture and return to the sump are observed.

3,771,353
METHOD AND APPARATUS FOR MEASURING OIL IN WATER

Ralph E. Jenkins, Irving, Tex., assignor to Core Laboratories, Inc., Dallas, Tex.

Filed Jan. 6, 1972, Ser. No. 215,814
Int. Cl. G01n *11/00, 33/18*
U.S. Cl. 73—61.1 R **6 Claims**

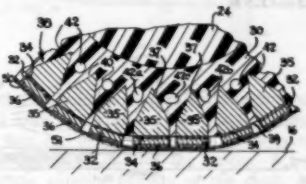
Method and apparatus for measuring minute quantities of oil in water in which an annular oil collecting chamber having a transparent cover with graduated volume indicia is secured at the upper ends of coaxial output tubes extending upwardly from the narrow upper end of a frusto-conical centrifugal separation chamber, so that the separated oil flows from said separation chamber through the annular space between said output tubes into said collecting chamber, where its volume may be determined with reference to said volume indicia.



3,771,354
RAPID ULTRASONIC INSPECTION APPARATUS

Darrow L. Miller, Los Angeles, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 7,274, Jan. 30, 1970, abandoned. This application Dec. 6, 1971, Ser. No. 204,838
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.7 **20 Claims**



A probe for a non-destructive testing to identify internal structural defects during continuous rolling contact with a workpiece surface. A rotatable element on the probe has a plurality of separate piezoelectric segments secured thereto and elastically supported to contact the workpiece individually and progressively. A dry acoustical couplant secured to each segment forms a mechanical bond and acoustical impedance match between the piezoelectric segments and the workpiece surface.

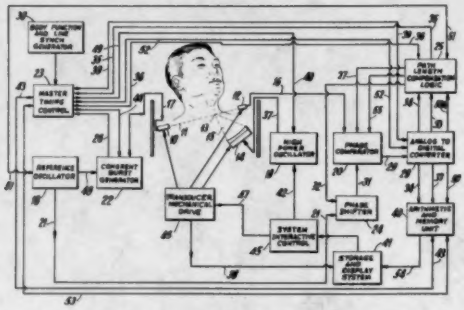
3,771,355
ULTRASONIC INSPECTION AND DIAGNOSIS SYSTEM

Thomas D. Sachs, 34 S. Williams St., Burlington, Vt.

Filed Sept. 30, 1971, Ser. No. 185,306
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.5 R **13 Claims**

A system for the inspection of the internal nature of a material utilizes an exciting ultrasonic field which is directed at a focal point to be inspected and heats that focal point. An ultrasonic sensing beam is directed through the material and through the heated focal point and is received by a transducer. A differential measurement of a propagation parameter of the sensing beam is accomplished by comparing a burst of its ultrasonic waves through the focal point without the heating effect of the exciting field, with an identical burst of the same

duration, amplitude and frequency, but immediately after the heating effect has been accomplished by the exciting field.



This system may be used to determine tissue characteristics, internal blood flow, and for other medical diagnostic functions.

3,771,356

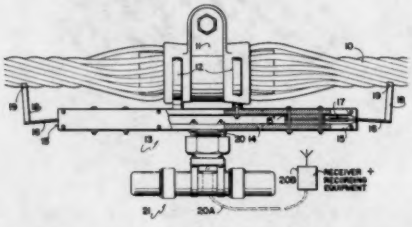
VIBRATION MEASURING ASSEMBLIES FOR ENERGIZED AND NON-ENERGIZED POWER LINE VIBRATION MEASUREMENTS

James Mitchell, Regina; Douglas Austin Bassett, Saskatoon, Saskatchewan; David George Glass, Saskatoon, Saskatchewan; Larry Allan Rodney Hoffman, Saskatoon, Saskatchewan; William Leslie Arnold Postle, Saskatoon, Saskatchewan, and Dennis William Johnson, Saskatoon, Saskatchewan, all of Canada, assignors to Saskatchewan Power Corporation, Regina, Saskatchewan, Canada

Filed Mar. 14, 1972, Ser. No. 234,599

Int. Cl. G01n *29/00*

U.S. Cl. 73—71.5 R **8 Claims**



A single point constant contact assembly is mounted on one end of a resilient cantilever beam either adjacent to or remote from an aerial conductor suspension clamp. The other end of the cantilever beam has bonded to it strain gauges to monitor deflections occurring in the conduits and these deflections are then amplified and transmitted to a remotely situated receiver station.

3,771,357

APPARATUS FOR DETERMINING THE COMPRESSION STRENGTH OF SPHEROIDAL MATERIAL MADE OF URANIUM, THORIUM AND PLUTONIUM MIXED OXIDES AND THE LIKE

Arnaldo Gambini, San Donato Milanese, Italy, assignor to Snam Progetti S.p.A., San Donato Milanese, Italy

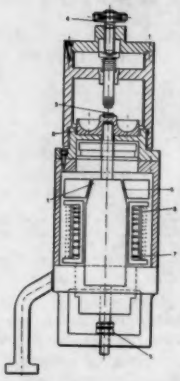
Filed Dec. 18, 1970, Ser. No. 99,333

Claims priority, application Italy, Dec. 19, 1969, 26021 A/69

Int. Cl. G01n *3/08*

U.S. Cl. 73—94 **5 Claims**

An apparatus for automatically determining the compression strength of spheroidal materials comprises an electromagnet having a vertically moving element and adjustment means to provide an air gap, a power winding for exciting the moving element magnetically coupled to a control winding which generates a pulse stopping the exciting current to the power



winding when the spheroidal material breaks and means for amplifiying and detecting the pulse generated by the control winding and correlating the value of the excitation current with the compression strength of the sample.

3,771,358

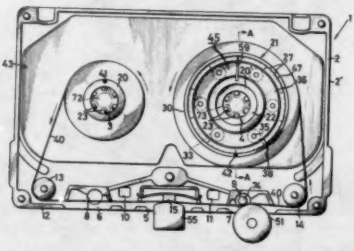
TORQUE MEASURING APPARATUS

Yuzo Yamano, Kawasaki-shi, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 120,892, March 4, 1971, abandoned. This application May 23, 1972, Ser. No. 256,177

Int. Cl. G01l *3/00*

U.S. Cl. 73—134 **14 Claims**

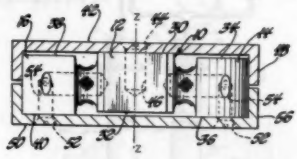


A torque measuring apparatus is adapted to take the place of a tape cassette in a magnetic tape recorder and comprises a housing having apertures adapted to receive the reel shafts of the magnetic tape recorder, an inner ring member rotatable around at least one of the apertures for rotatable coupling with the reel shaft extending into that aperture, an outer ring member rotatable around the inner ring member, spring means connecting the inner and outer ring members and yieldably constraining said ring members to rotate together while rotation of the outer ring member with the inner ring member is resisted, and indicator means responsive to relative rotational movement of the inner and outer ring members to indicate the torque exerted on the tape by the recorder. Rotation of the outer ring member with the inner ring member may be resisted by a tape engaged with the outer ring member and the capstan of the tape recorder, or by springs connected between the outer ring member and the housing.

3,771,359
LOAD CELL

Ralph S. Shoberg, Farmington, Mich., assignor to GSE, Incorporated, Livonia, Mich.

Filed May 17, 1972, Ser. No. 254,117
Int. Cl. G01l *1/22*
U.S. Cl. 73—141 A **18 Claims**

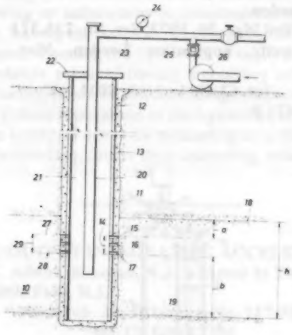


A load cell is disclosed for measuring forces and moments with respect to two or three axes of measurement. A combination of load cell geometry and strain gage arrangement results in the measurement of all quantities as a function of shear stress.

3,771,360
VERTICAL PERMEABILITY TEST

Michael Prats, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sept. 27, 1971, Ser. No. 183,909
Int. Cl. E21b *49/00*
U.S. Cl. 73—155 **5 Claims**



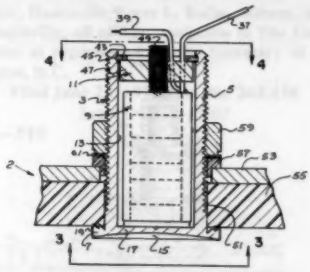
Permeabilities normal to and parallel to the plane of a subterranean hydrocarbon reservoir are measured by flowing a liquid through a single short interval of a well at a substantially constant rate and recording the variation of well pressure with time. In one embodiment normal permeability is determined by comparing the record pressure with a reference pressure response. In a second embodiment, fluid flow is stopped after a selected period of time, the variation of well pressure with time after fluid is stopped is measured, and normal permeability is determined from this measured variation of pressure with time.

3,771,361
ULTRASONICALLY CLEANED ELECTRODE AND FLOWMETER USING IT

Stephen Reznick, Cherry Hill, N.J., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 20, 1972, Ser. No. 245,815
Int. Cl. G01f *1/00;* **G01p** *5/08*
U.S. Cl. 73—194 EM **25 Claims**

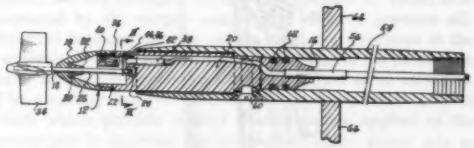
An electromagnetic flowmeter in which the opposed pick-up electrodes are button electrodes having hollow stems and concave button faces. The central part of the button is about 0.05 inches thick and a transducer stack including a piezoelectric ceramic disk is clamped against the inner wall of the button (the bottom of the hollow stem) by a compression screw at the free end of the stem.



3,771,362
FLUID VELOCITY INDICATOR

Paul C. Roberts, Pasadena, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1972, Ser. No. 256,832
Int. Cl. G01f *1/06*
U.S. Cl. 73—229 **2 Claims**



A fluid velocity indicator which includes a casing having fore and aft ends. A propeller shaft is rotatably mounted through the fore end of the casing with portions of the shaft extending exterior and interior the casing. A propeller is mounted on the exterior portion of the shaft, and a light source and a light sensor are mounted within the casing in a spaced apart relationship. Means are mounted on the interior portion of the propeller shaft and movable through the space between the light source and the light sensor for coding the light transmitted to the light sensor when the propeller is rotated by the fluid. In this manner light sensed by the light sensor will enable indication of velocity and direction of fluid flow passed the propeller.

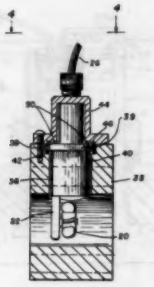
3,771,363
TURBINE-TYPE FLOW RESPONSIVE DEVICE

W. Mead Stapler, One Dey Ln., Riverdale, N.J.

Filed June 12, 1972, Ser. No. 262,107
Int. Cl. G01f *1/00*
U.S. Cl. 73—231 R **7 Claims**

This invention pertains to flow meters and in particular to fluid flow measuring apparatus characterized as having a turbine mechanism where a blade of a turbine as it is brought in way of a magnetic pickup causes a pulse to be actuated. This electrical signal is read as an increase in voltage, or a transducer reads the number of pulses to determine the rate of flow. In particular, the present flow meter incorporates a probe which in addition to carrying the turbine blades or propeller also carries the magnetic pickup on a stem or post portion which is made as an integral unit so that said probe may be removed from or inserted into a housing for placement in the midstream of a larger passageway to read the flow in

said passageway. This embodiment enables a probe of one size and design to be used in any one of several different diameters



of conduits to measure the rate of flow and provides a flow meter having an installation versatility not heretofore known.

3,771,364

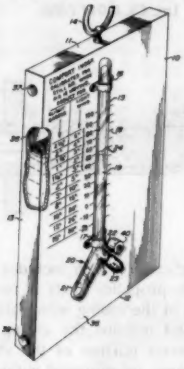
DIRECT READING COMFORT INDEX THERMOMETER

Mark N. Worthington, 10227 White Mountain Rd., Sun City, Ariz.

Filed Apr. 7, 1972, Ser. No. 242,020

Int. Cl. G01w *1/06*

U.S. Cl. 73—336 **9 Claims**



This specification discloses a direct reading comfort index thermometer for determining the temperature, humidity and air movement index of the ambient atmosphere, comprising a panel displaying a row of calibrations, a transparent tube mounted on said panel along said row, a tubular reservoir connected at its mid-point to one end of said tube and a temperature-responsive liquid in said reservoir which rises or falls in said tube in response to change in ambient conditions. One leg of the tubular reservoir is covered, or partially covered, with a water absorbent material such as a fabric. A chart along side of said calibrations shows corrections to apply to index readings for various air movement conditions, which chart may be expressed as degrees to be deducted from the comfort index or as percentages to be deducted from the index.

3,771,365

PRESSURE MEASUREMENT APPARATUS FOR PNEUMATIC MATERIAL TRANSPORT LINES

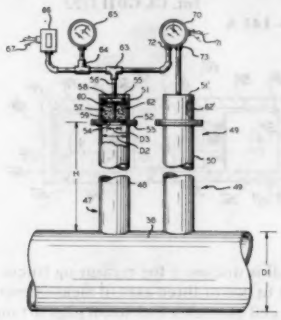
Eberhard G. Schempp, Pittsburgh, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Dec. 14, 1971, Ser. No. 207,822

Int. Cl. G01l *7/00*

U.S. Cl. 73—395 **13 Claims**

In a system for measuring the pressure in a conduit or line in which finely divided solids are transported in gas, the single inlet of the primary measuring gauge is connected to the transport line by a tube whose outlet is preceded by a first filter. A differential pressure limit gauge has one inlet connected to the line by a similar filter containing tube and its other inlet connected to the outlet of the first tube so as to measure the pressure drop across the first filter and thereby indicate when either filter may be clogged. The differential gauge produces an alarm signal to indicate filter condition.



3,771,366

DEVICE FOR COLLECTION AND MEASUREMENT OF LIQUID VOLUMES

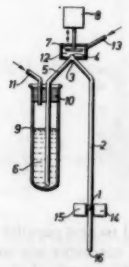
Sigrard Thulin, Taby, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Mar. 20, 1972, Ser. No. 236,311

Claims priority, application Sweden, Mar. 26, 1971, 3973/71

Int. Cl. G01n *1/10;* **B01l** *3/02*

U.S. Cl. 73—421 B **8 Claims**

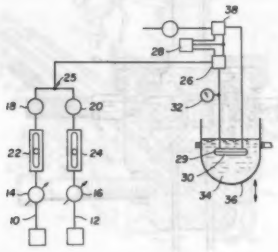


A measuring tube with two shanks, the first one having the orifice below the surface of a liquid from which a volume is to be measured, has means to apply a suitable gas pressure above said liquid as compared with the pressure at the orifice of a second shank, there being further between these two shanks a branch with a side-tube, which can also be placed under a suitable gas pressure in relation to the pressure at the orifice of the other shank and to that at the surface of the liquid a controllable valve being adapted to open and close the orifice of the side-tube, a detection device being also placed at a well defined level on the second shank before the orifice of the same in flow direction, and being so arranged that, when the interface between gas and fluid in the measuring tube while the valve is closed reaches the detection level in said shank the detection device actuates a mechanism which opens the valve device thus releasing the volume between said detection level and the side-tube which volume is thus measured.

3,771,367
METHOD OF DETERMINING DESORPTION ISOTHERM CURVE AND OF SCANNING HYSTERESIS

Seymour Lowell, 42 Hollow Rd., Albertson, and Stewart Karp, 67 Hickory Lane, Roslyn Heights, both of N.Y.

Filed May 4, 1972, Ser. No. 250,283
Int. Cl. G01n *15/08*
U.S. Cl. 73—432 PS 2 Claims



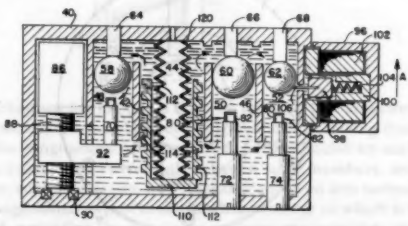
As an improvement over the method of our prior U.S. Pat. No. 3,555,912 which uses flowing adsorbate and carrier gases to develop surface measurement data, the within improved method further advances this technique by starting at unity, i.e. pure adsorbate, preparatory to obtaining each data point, to thus reliably permit construction of the desorption isotherm curve. During or subsequent to construction of said desorption curve, having the noted descending character, it is herein contemplated scanning the hysteresis of said curve by measuring at a relative pressure having a contrary relationship to a selected starting point, i.e. an ascending relation.

Similarly, data is obtained in the hysteresis of the ascending adsorption isotherm curve by measuring at a relative pressure having a descending, rather than ascending, relation to a starting point.

3,771,368
MULTI-OUTPUT INTEGRATING ACCELEROMETER

William C. Albert, Boonton, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Feb. 22, 1971, Ser. No. 117,592
Int. Cl. G01p *7/00*
U.S. Cl. 73—503 11 Claims

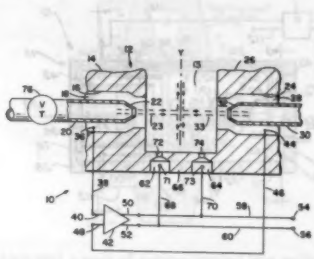


An accelerometer having a plurality of proof masses adapted to move relative to a casing in response to accelerations of the casing. The proof masses differ with respect to mass or size so that they respond differently to forces thereon as a result of the acceleration. An output signal is generated in response to a predetermined movement of each of the proof masses.

3,771,369
FLUERIC TRANSVERSE-IMPACT MODULATOR ACCELEROMETER

Joe S. Hunter, Huntsville; Escar L. Bailey, Athens, and Little J. Little, Huntsville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 22, 1972, Ser. No. 265,416
Int. Cl. G01p *15/02*
U.S. Cl. 73—515 1 Claim

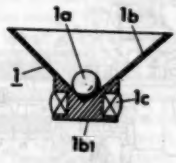


A flueric accelerometer having a housing that defines a fluid impact chamber. Two opposed power input tubes inject power jets into the impact chamber that meet head on and form a radial flow that is in effect a proofmass whose balance point changes when subjected to acceleration forces. Two receiving chambers, one around each input tube, captures a portion of the radial flow. Acceleration forces change the momentum flux of the jets causing the balance point of the radial flow to move; thereby changing the relative portions of radial flow captured by the output receivers to cause a pressure differential between the two output receivers. Pressures in the receivers are detected and a signal indicative of the pressure in each receiver is applied as inputs to a fluid servo amplifier. The amplifier has two outputs that are supplied to control ducts which provide control flows that are applied to the power jets to decrease the momentum of the power jets, as required, and bring the radial flow to a balanced position.

3,771,370
SENSOR FOR A POSITIVE OR NEGATIVE ACCELERATION RESPONSIVE SWITCH

Katsuyuki Takagi, Gifu, and Tatsuo Kato, Nagoya, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakasho, Nishikasugai-gun, Aichi Prefecture, Japan

Filed Dec. 17, 1971, Ser. No. 209,143
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 R 11 Claims



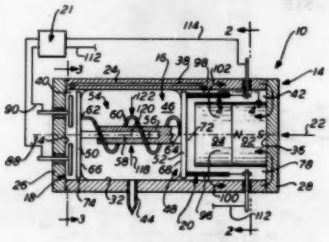
A sensor for a positive or negative acceleration responsive switch for detecting an acceleration exceeding a predetermined level applied to a moving body. A bowl having a reverse conical wall at its upper peripheral surface is mounted horizontally to the moving body, and a turning coil which forms a part of an oscillator circuit is disposed at the lower portion of the bowl. Within the bowl, a conductive medium such as metallic ball or conductive liquid, e.g., mercury is placed so that it is displaced under an acceleration applied in any horizontal direction. The acceleration may be detected based on the distance of the conductive medium from the tuning coil.

3,771,371

ACCELEROMETER HAVING A LIQUID PROOF MASS

William C. Albert, Boonton, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Nov. 26, 1971, Ser. No. 202,327
Int. Cl. G01p 15/08
U.S. Cl. 73—516 LM 6 Claims



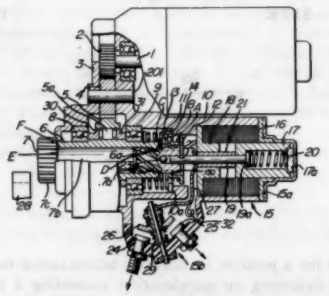
An accelerometer is provided comprising, a housing having a longitudinal sensing axis, a proof mass disposed in the housing and displaceable relative thereto, pickoff means disposed adjacent the proof mass and connected to the housing for sensing displacement of the proof mass, and force means mounted on the housing and disposed adjacent the proof mass for returning the proof mass to its null position after such displacement, wherein the proof mass comprises, a non-wetting liquid, and a container which is floated by the liquid and which is arranged to contain the liquid within the housing.

3,771,372

STARTER MEANS FOR AN INTERNAL COMBUSTION ENGINE

Taro Asahi, Aichi-ken, and Tatuo Doi, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Aichi-ken, Japan

Continuation-in-part of Ser. No. 22,822, March 26, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,351
Int. Cl. F02n 15/06
U.S. Cl. 74—7 R 8 Claims



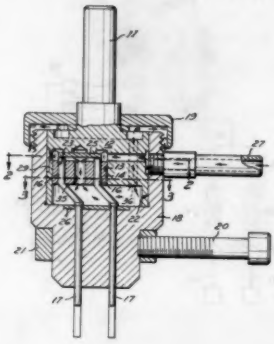
Starter means for an internal combustion engine including a pinion shaft having a pinion at one end and inserted into and in spline engagement with a hollow shaft which is driven by a starter motor, said pinion shaft being arranged to be moved to a projecting position in response to the initial operation of said starter motor, the spline portion between the hollow shaft and the pinion shaft being unexposed.

3,771,373

MULTIPLE SPINDLE DRIVE DEVICE

Frank G. Zagar, Euclid, and Ernest F. Jerome, Timberlake, both of Ohio, assignors to Zagar, Inc., Cleveland, Ohio

Filed June 1, 1972, Ser. No. 258,654
Int. Cl. F16h 21/12
U.S. Cl. 74—63 3 Claims



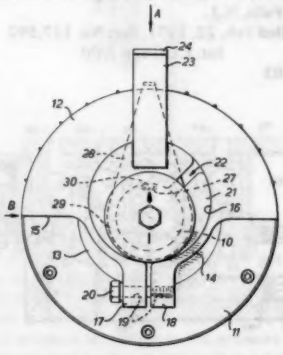
In a multiple spindle drive head in which an oscillator is driven by a drive crank in a housing and in turn drives a number of spindles, cylindrical bearing interfaces are provided between (1) the spindles and the oscillator, (2) the oscillator and the drive crank, and (3) the drive crank and the housing, and the cylindrical interfaces all overlap each other at a given zone along the length of the head.

3,771,374

OUT-OF-BALANCE WEIGHT ASSEMBLIES

Marcel Henry Choules, Surrey, England, assignor to Russell Finex Limited, London, England

Filed Aug. 11, 1972, Ser. No. 279,885
Claims priority, application Great Britain, Aug. 16, 1971, 38375/71
Int. Cl. F16h 33/10
U.S. Cl. 74—87 9 Claims



An out-of-balance weight assembly as used for example on vibratory sieves, shakers tables, ball mills or the like, and comprising a weight having an eccentric bush adjustably mounted in a bore in the weight. Means to restrain relative movement between the weight and the bush, and the bush and a driving shaft are provided. The out-of-balance balance component, and/or the angle thereof relative to the shaft when the shaft is rotated may be varied by rotational adjustment of the weight and/or the bush about the shaft.

3,771,375

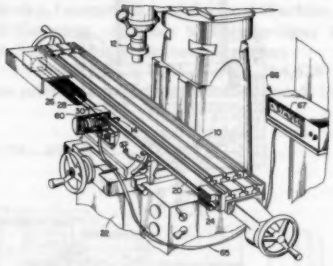
PRECISION LINEAR MOTION CONVERTING AND POSITION MEASURING APPARATUS

Seymour Mermelstein, Newton, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

Division of Ser. No. 61,725, Aug. 6, 1970. This application Aug. 3, 1972, Ser. No. 277,792

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.2 15 Claims



A roller-band device including an idler roller, drive roller and band, is mounted on a carriage movable linearly relative to the band so that the angle of rotation of the drive roller is related to the distance traveled by the carriage. The drive roller can be driven to convert rotary motion to linear motion or the carriage can be driven to convert linear motion to rotary motion. Means including a pulse generator coupled to the drive roller produces a very accurate readout of the position of the carriage.

3,771,376

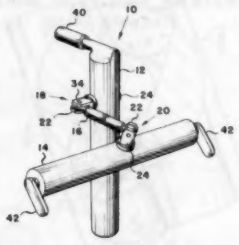
DRIVE MECHANISM

Artemas M. Larkin, Glendale, Calif., assignor to Lockheed Aircraft Corporation, Los Angeles, Calif.

Filed Jan. 31, 1972, Ser. No. 221,961

Int. Cl. F16h *21/44*

U.S. Cl. 74—96 14 Claims



A mechanism for locking a door or other device and comprising two members each preferably cylindrical, having their respective longitudinal axes oriented perpendicular to each other, a connecting swivel link between such members, and elements, such as clevises, and rotatable about an axis normal to the longitudinal axis of the respective member to which it is mounted, providing the necessary swinging movement to the swivel link as the members are rotated about their respective axes and between alternate positions. As the first of such members functions as a driving member by rotation about its longitudinal axis, the other, or driven, of such members correspondingly rotates about its longitudinal rotatable elements and the axis. When the axis of the swivel link are caused to lie in a plane containing the longitudinal axis of the driving member, the driven member cannot be rotated by other than the driving member; thus, in effect, locking the mechanism in such position.

3,771,377

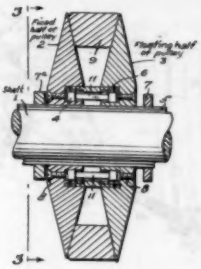
VEE-BELT SPRING-O-MATIC POWER TRANSMISSION

Clarence C. Bush, Bel Air, Md., assignor to the United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 21, 1971, Ser. No. 182,336

Int. Cl. F16h *55/52*

U.S. Cl. 74—230.17 A 8 Claims



A vee-belt and a pair of spring-loaded vee pulleys comprise an automatic transmission which increases torque as necessary (at the expense of speed) or automatically increases speed when high torque is not necessary.

3,771,378

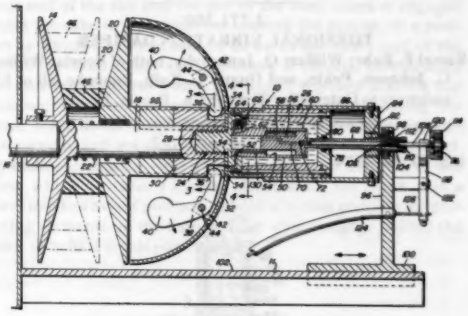
VARIABLE RATIO BELT DRIVE

William E. Knobel, 1726 Walla Walla, Walla Walla, Wash.

Filed June 28, 1972, Ser. No. 267,261

Int. Cl. F16h *55/52*

U.S. Cl. 74—230.17 E 6 Claims



A drive assembly including a pair of opposing pulley flanges mounted for rotation together about concentric axes and shiftable axially relative to each other. First structure is provided to yieldingly bias one of the flanges in a first direction relative to the other flange and second structure is provided and responsive to rotational speed of the flanges to urge the flange acted upon by the first structure in the opposite direction with a force increasing as the speed of rotation of the flanges increases. In addition, third deactivatable structure is provided to selectively prevent movement of the one flange under the influence of the second structure.

3,771,379

SAFETY STEERING ARRANGEMENTS FOR MOTOR VEHICLES

Wolfgang Rohrbach, Russelsheim, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 4, 1972, Ser. No. 294,824

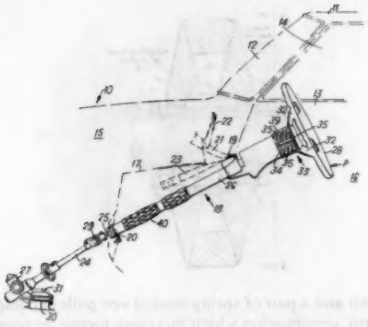
Claims priority, application Germany, Oct. 7, 1971, P 21 50 061.8

Int. Cl. B62d *1/18*

U.S. Cl. 74—492 8 Claims

A safety steering arrangement for a motor vehicle includes a plastically distortable deformation member interposed axially

between the spokes and a hub member of a steering wheel and/or arranged as an energy-absorbent jacket tube coaxially surrounding a longitudinally collapsible steering shaft portion of a steering column. The deformation member consists of a helically wound strip of steel sheet material the windings of which are interconnected by several circumferentially spaced and longitudinally extending stays, which are likewise made of



steel sheet material and are connected to the windings of the helically wound strip by spot welds.

Each of the stays is formed with convex corrugations disposed between the individual windings of the helically wound strip, for accommodating tilting movement of the steering wheel in the event of impact of the driver against the steering wheel.

3,771,380

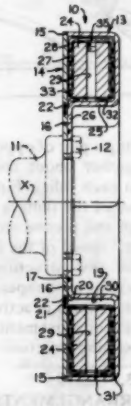
TORSIONAL VIBRATION DAMPER

Russel F. Bahr; William O. Jankovsky, both of Peoria; William G. Johnson, Pekin, and Duane V. Kolb, Roanoke, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 12, 1971, Ser. No. 161,638

Int. Cl. F16f *15/12*

U.S. Cl. 74—574 **1 Claim**



A torsional vibration damper comprises a housing adapted to be attached to the crankshaft of an internal combustion engine and an annular weight rotatably mounted in a silicone-filled chamber of the housing. The housing comprises a flat, annular plate secured to an annular case by two electro-beam welds. An O-ring seal is positioned between the plate and case to cooperate with the welds for sealing purpose. Fill ports, adapted to charge the housing's chamber with silicone, each have a lead seal and an overlying expansion plug secured therein.

3,771,381

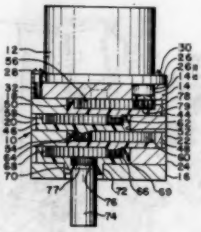
MINIATURE ELECTRIC TREND RECORDER HIGH TORQUE SPEED REDUCER

Emil Holzhauser, and Robert D. Rea, both of Fort Washington, Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed June 30, 1972, Ser. No. 268,037

Int. Cl. F16h *1/20, 1/06*

U.S. Cl. 74—421 R **10 Claims**



Each one of a preselected plurality of similar gears are stacked together in order to form a gear drive and each gear in turn is mounted within and supported for rotation on separate internal bearing walls which form cavities in each one of a series of stacked plates in order to provide a small, high torque gear reduction unit.

3,771,382

BALL-THREADED SPINDLE NUT WITH AT LEAST ONE INDIVIDUAL OVERFLOW INSERT MEMBER

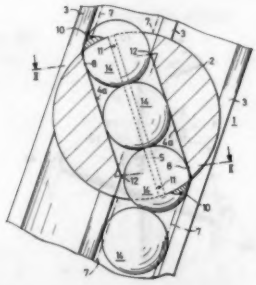
Richard Wilke, Am Weissenfeld 4, Schwelm, Germany

Filed Oct. 3, 1972, Ser. No. 294,501

Claims priority, application Germany, Oct. 4, 1971, P 21 49 392.5

Int. Cl. F16h *55/00*

U.S. Cl. 74—459 **4 Claims**



A spherical-thread spindle nut bearing at least one single-transfer insert piece, which comprises a spherical-thread spindle nut and a spindle. A nut housing surrounds the spindle. Two adjacent thread starts have thread flanks. At least one single-transfer insert piece is disposed between the thread flanks. Balls are adapted to travel in threads along bearing lines in the direction of rotation of a nut and the spindle. The bearing lines, receiving the load in the direction of rotation in the thread of the nut, are interrupted in the range of the transfer of the balls into and out of, respectively, said single-transfer insert piece by each of a bevel and perpendicular, respectively, forming a place of discontinuity. The balls, upon leaving and reentering, respectively, into the bearing lines, rest at predetermined first points simultaneously on perpendicular guide path wall parts, at predetermined second points each, and seat themselves in the guide path bottom, extending perpendicularly to the guide path wall part, at each of

predetermined third points. The perpendicular guide path wall part of the single-transfer insert piece is bent parallel to the bearing lines, the latter being free of points of discontinuity at the sides opposite the points of discontinuity.

3,771,383

SERVO STEERING MECHANISM FOR VEHICLES

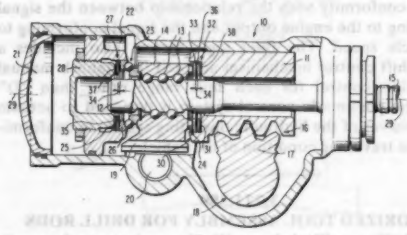
Hans-Joachim M. Forster; Klaus Katz; Manfred Bulow, all of Stuttgart; Anton Scheuter, Aichschiess; Jaromir Bordovsky, Leutenbach, and Gerhard Wuchter, Neuhausen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Dec. 3, 1971, Ser. No. 204,628

Claims priority, application Germany, Dec. 5, 1970, P 20 60 029.7

Int. Cl. B62d *3/08*

U.S. Cl. 74—499 **16 Claims**



A servo-steering mechanism for vehicles in which a steering nut spirally movably connected with the steering worm is rotatably supported in the working piston connected with the steering shaft while the steering nut is supported with respect to the working piston in both axial directions of the piston axis by way of compression springs, preferably cup spring pairs.

3,771,384

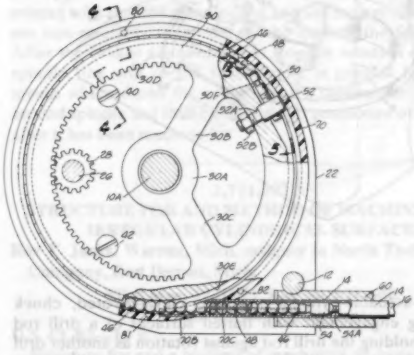
MECHANICAL TRANSMISSION DEVICE

Kenneth V. Hackman, Arcadia, Calif., assignor to Southwest Products Co., Monrovia, Calif.

Filed Mar. 20, 1972, Ser. No. 235,917

Int. Cl. F16c *1/18*

U.S. Cl. 74—505 **8 Claims**



A linear actuator incorporates a casing on which a crank is mounted. Rotation of the crank produces rotation of a gear which meshes with the inner portion of a rotatably mounted ring. A cable is attached to the outer periphery of the ring and extends through a series of nested balls which engage a grooved portion of an arcuate teflon strip. The other end of the cable is attached to a rod which is slidably mounted in a stationary tube. Rotation of the crank produces a linear movement of the rod.

3,771,385

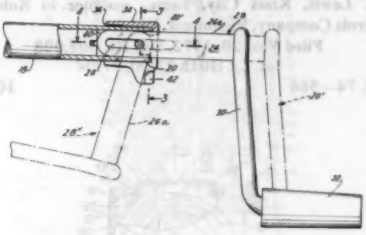
BED CRANK MOUNTING

Roland A. Benoit, 89 S. Main St., Danielson, Conn., and John Curran, 51 River Rd., Fitchville, Conn.

Filed Aug. 14, 1972, Ser. No. 280,444

Int. Cl. G05g *1/12*

U.S. Cl. 74—547 **7 Claims**



A bed crank mounting, includes a tube which is adapted to be connected to a rotatable part which is rotated to adjust the height of a bed or the position of one of its parts. The tube is provided with a slot extending inwardly from its outer end and carries a cross pivot pin upon which is mounted a hand crank for turning the tube and for raising and lowering the bed. The hand crank includes an axially elongated slot in which the pivot pin of the tube is confined. A cap is secured around the end of the tube and it includes an end slot which continues downwardly and along one side in alignment with the slot of the tube. The hand crank may pivot on the cross pin carried by the tube between a position in which the pin is engaged at the inner end of the slot and the end of the hand crank is engaged within the tube in a position for rotating the part or, to a position in which the pin is moved down to the outer end of the slot of the hand crank and the crank is pivoted downwardly and located to extend within the slot of the tube and the cap member. The construction includes means for holding the crank both in an inoperative position at which it extends downwardly and inwardly from the end of the tube. The holding means comprise either the formation at the end of the crank which provides a biasing effect when the crank is in a retracted downward position to hold it in that position, or projecting elements on the cap member which engage behind the crank to hold it in this position.

3,771,386

BEAM PRESSES

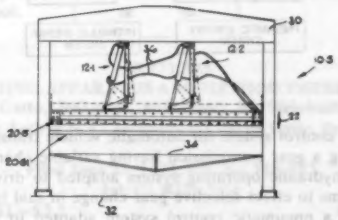
Frederik Johannes De Jager, Orange Free State Province, Kestell, Republic of South Africa

Filed Oct. 20, 1971, Ser. No. 190,853

Claims priority, application South Africa, Oct. 30, 1970, 707397

Int. Cl. G05g *1/04*

U.S. Cl. 74—520 **5 Claims**



A press or guillotine having a beam-type working head which is displaceable by hydraulic thrust means via at least one pair of toggle struts. At the end of a working stroke the included angle defined by the struts exceeds 150°. One of the

struts may form the working arm of a lever of the second order whose effort arm is connected to the thrust means. Matched pairs of sturts may be used, operable by matched thrust means.

3,771,387

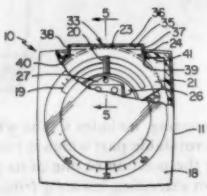
CONTROL DEVICE WITH CONCEALED SELECTOR MEANS AND METHOD OF MAKING THE SAME

Jay L. Lewis, Knox City, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 20, 1972, Ser. No. 308,008

Int. Cl. H01h *27/00, 37/04*

U.S. Cl. 74—566 **10 Claims**



A control device having a casing provided with an opening through which a movable selector member extends for permitting manual movement of the selector member for setting the desired operation of the control device. A cover member is detachably secured to the casing and closes the opening over and around the selector member to conceal and prevent operation of the selector member unless the cover member and/or the casing is removed to expose the selector member. The cover member has a pair of flanges extending therefrom which are bent inside the casing against the under side thereof to provide securing means for the cover member to the casing that must be unfastened inside the casing before the cover member can be removed.

3,771,388

FLUID CONTROL SYSTEM FOR AUTOMATIC VEHICLE TRANSMISSIONS

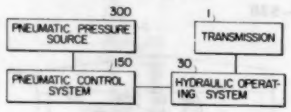
Tomoo Ishihara, Tokyo; Minoru Ohya, Toyota; Shin Ito, and Fmihiro Ushijima, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Dec. 20, 1971, Ser. No. 209,712

Claims priority, application Japan, Dec. 21, 1970, 45/114253

Int. Cl. B60k *21/00*

U.S. Cl. 74—861 **17 Claims**



A fluid control system for automatic vehicle transmissions comprising a gear transmission having variable change gear ratios, a hydraulic operating system adapted to drive servo mechanisms to effect selective gear change in said transmission, and a pneumatic control system adapted to produce pneumatic signals representative of vehicle operating conditions, said pneumatic signals being applied to control said hydraulic operating system. The hydraulic operating system comprises a plurality of valves adapted to regulate hydraulic fluid flow whereby to selectively operate the transmission servo mechanisms, and diaphragm elements for controlling operation of said valves in accordance with the pneumatic pressure signals from the pneumatic control system. The pneumatic control system comprises an engine output signal generator for producing a pneumatic pressure signal conforming to the engine output, a vehicle speed generator for producing a pneumatic pressure signal conforming to the vehicle speed, a kick-down signal generator for producing a pneumatic pressure signal to effect transmission downshift, a shift lever mechanism for producing a pneumatic pressure signal in conformity with the shift range setting position of the shift lever, and a fluid logic system containing logic elements into which these pneumatic pressure signals are applied as inputs and which will operate to develop appropriate output signals in response thereto to effect desired operation of the hydraulic operating system. The fluid logic system includes an automatic shift control mechanism consisting of a signal adjusting circuit and shift operating elements and adapted to effect automatic operation of the transmission when the shift lever is in "D" range in conformity with the relationship between the signal conforming to the engine output and the signal conforming to the vehicle speed. The fluid logic system also includes a manual shift control mechanism adapted to establish manual transmission control for each shift range other than "D" range. The pneumatic control system is designed to actuate the shift valves of the hydraulic operating system in conformity with the travelling condition of the vehicle.

3,771,389

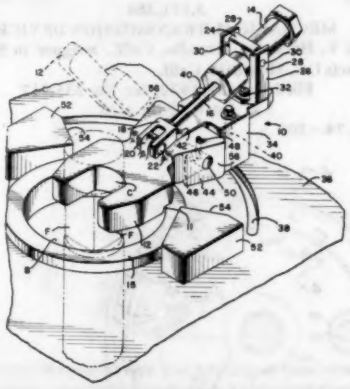
MOTORIZED TOOL ASSEMBLY FOR DRILL RODS

Francis P. Coyne, Clarksburg, W. Va., assignor to Ingersoll-Rand Company, New York, N.Y.

Continuation of Ser. No. 79,597, Oct. 9, 1970, abandoned. This application May 19, 1972, Ser. No. 255,057

Int. Cl. B25b *23/00;* **E21b** *19/16*

U.S. Cl. 81—54 **13 Claims**



A fluid-actuable-cylinder-powered, clevis-pivoted, chuck for locking engagement with flatted surfaces of a drill rod shank for holding the drill rod against rotation as another drill rod is coupled thereto or uncoupled therefrom. The clevis and cylinder cooperate to move the chuck away from the drill rod string when not in use. A platform, which has an arcuate slot formed therein, guides the chuck in a rotary arc, during rod rotation, for arresting engagement against one of two spaced-apart bumper blocks fixed to the platform. A stepped shoulder formed in the chuck engages the inside diameter of a centralizer bushing, disposed within the platform, to cooperate with the arcuate slot to slue the chuck about the axial center of the bushing. In rod-uncoupling use, the impacting engagement of

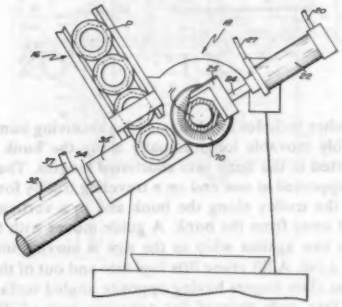
the chuck with the bumper block loosens or "breaks out" the coupling of the held rod and the rod coupled thereto.

3,771,390

AUTOMATED APPARATUS FOR MACHINING PARTS ON A ROTATABLE ARBOR

Lucien W. Carignan, Warwick, R.I., assignor to New England Malleable Iron Company, Warwick, R.I.

Filed Dec. 10, 1971, Ser. No. 206,622
Int. Cl. B23b *13/00*
U.S. Cl. 82—2.5 **6 Claims**



An automated machine having a rotatable arbor upon which parts are placed prior to advancing a cutting tool against a surface of the part. A first spindle is attached to one end of the arbor and a second spindle having a tubular length surrounds the first spindle. A cone pulley is keyed to the outer surface of the second spindle and it is rotatably driven by a belt connected to a drive motor. Formed on the outer surface of the first spindle are a plurality of recesses each having a number of bores formed in their bottom surfaces. Coil springs are mounted in each of the bores and a block of laminated phenolic material rests atop said springs whereby said springs maintain said block in frictional engagement with the inner hollow surface of the second spindle. The plate and springs thus act as a clutch between the two spindles. Mounted near the opposite end of the first spindle is a brake disc which rotates with the first spindle. The friction facings of the brakes are non-rotatably supported on the shaft of the first spindle. After the brakes are actuated to stop the rotation of the first spindle, the end of the first spindle is gripped by ejection means which draws the arbor into the tubular section of the second spindle and thus ejects the part positioned on the arbor after it has been machined.

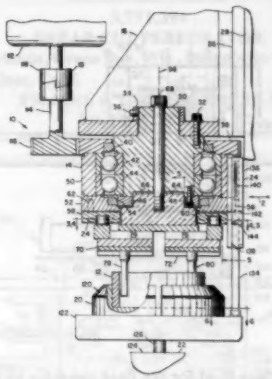
3,771,391

STRUCTURE FOR AND METHOD OF MACHINING AN IRREGULAR CYLINDRICAL SURFACE

Roy T. Jacks, Warren, Mich. assignor to North Tool and Mfg. Company, East Detroit, Mich.

Filed Mar. 22, 1971, Ser. No. 126,600
Int. Cl. B23b *3/28*
U.S. Cl. 82—19 R **5 Claims**

Structure for and a method of machining an irregular cylindrical surface. The structure includes chuck means for holding a workpiece for rotation about the axis of generation of an irregular cylindrical surface to be machined thereon, slide means for holding at least one tool in engagement with the workpiece surface to be machined and for movement of the engaged tool axially of the axis of generation of the surface to be machined, a rotatably mounted cam ring and a cam follower secured to the slide means and engaged with the cam ring and carrying the tool for moving the tool radially of the workpiece along with the axial movement thereof to define the surface to be machined, and means for synchronizing rotation of the cam ring and workpiece to duplicate the cam surface of the cam ring in the workpiece with a selected orientation in the workpiece.

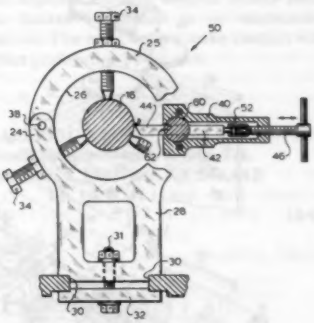


3,771,392

COMBINATION STEADY-REST AND TOOL HOLDER

Carl A. Johnson, 112 E. Palmetto Ave., Box 58, Howey-in-the-Hills, Fla.

Filed Sept. 7, 1972, Ser. No. 286,894
Int. Cl. B23b *29/14, 29/16*
U.S. Cl. 82—35 **5 Claims**



A steady-rest for a workpiece held by a lathing machine includes means for holding a cut-off tool in a direction normal to the workpiece, and further includes means for advancing the cut-off tool.

3,771,393

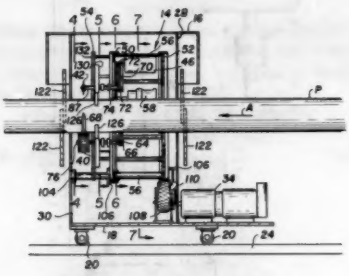
CUTTING APPARATUS AND METHOD THEREFOR

Charles Gatto, Bethpage, and Harry M. Steinbach, Middle Village, both of N.Y., assignors to Charles Gatto, Bethpage, N.Y.

Filed June 23, 1971, Ser. No. 155,857
Int. Cl. B23b *5/14*
U.S. Cl. 82—53.1 **18 Claims**

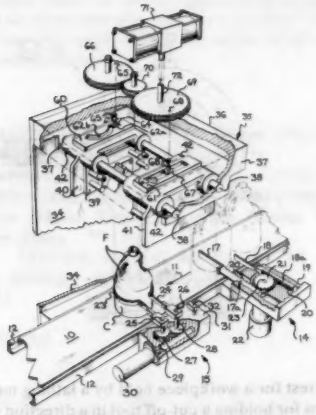
A cutting apparatus and method therefor, more particularly for cutting pipe and wherein the apparatus has cutting means to cut a desired length of moving pipe by moving the cutting means with the pipe and rotating the same about the pipe during the cutting operation. The apparatus and method also in-

cludes the rotation and movement of associated fluid and electrical operators for and with the cutting means to operate the



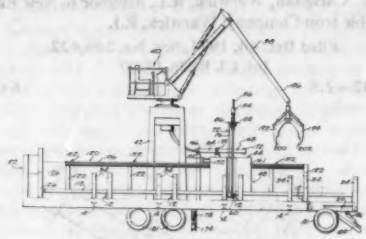
same and produce fluid for the fluid operator by receiving actuating electricity from a conventional non-rotating source.

3,771,394
TRIMMER FOR PLASTIC BOTTLES
Gerald L. Mohney, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 10, 1971, Ser. No. 179,337
Int. Cl. B20d *5/20*
U.S. Cl. 83—214 5 Claims



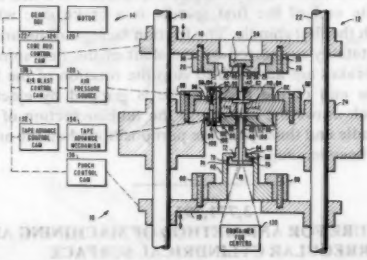
Method and apparatus is provided for trimming flash material from plastic containers while the containers remain on a continuously moving conveyor. A pair of grasping arms hold a single container in a stationary position on the conveyor preparatory to engagement and trimming by a deflasher mechanism. The deflasher mechanism has a pair of cam operated nest members which close around the container in the area to be trimmed and hold it in a fixed position as a knife member associated with one of the nest members trims the flash. Opening and closing of the platens is effected by means of rotary actuators mounted in cams of the respective platens. The cam of one of the platens follows while the cam of the other platen follows, in part, an arcuate path causing a lost motion during part of the movement of the rotary actuator.

3,771,395
LOG SLASHER
Calvin H. Heimerl, Box 171, Amasa, Mich.
Filed June 28, 1968, Ser. No. 741,087
Int. Cl. B27b *17/02*
U.S. Cl. 83—795 4 Claims



A log slasher includes an elongated log receiving bunk and a saw assembly movable longitudinally along the bunk to saw logs supported in the bunk into shortened lengths. The saw is pivotally supported at one end on a traveling trolley for movement with the trolley along the bunk and in a vertical plane toward and away from the bunk. A guide moves with the saw to hold the saw against whip as the saw is moving into, and away from, a cut. A lift crane lifts logs into and out of the bunk and includes clam fingers having opposite angled surfaces adjacent the free ends thereof for engaging logs of different diameter. The trolley drive and that for moving the saw toward and away from the bunk are carried on the trolley and an articulated arm assembly, extendible and contractible in response to trolley movement, supports the power supply conduits in a compact arrangement throughout the range of movement of the trolley and saw.

3,771,396
MAGNETIC TAPE PRESS
Ho Bin Im, Northridge, Calif., assignor to Amplex Corporation, Redwood City, Calif.
Filed Nov. 18, 1971, Ser. No. 200,000
Int. Cl. B26f *1/02*
U.S. Cl. 83—98 11 Claims



A press for punching minute toroids for magnetic core memories from a ferrite web member includes a central die plate disposed between an upper guide plate and a lower guide plate. The ferrite web member is advanced through a slot between the central die plate and the lower guide plate and stamped toroids are ejected through a slot in the upper guide plate adjacent the central die plate. A number of holes extending through the three plates at an acute angle with respect to the direction of web member motion but normal to the plane of the web member each receive a set of ganged punches. Each set includes an upper core rod inserted through the upper guide plate for punching the central disk of the toroid, a lower punch having an outside diameter for punching the outside diameter of a toroid and a central bore coaxially aligned

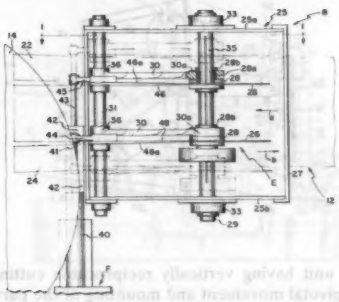
with the core rod for receiving the core rod. The central disks are forced through the central bore in the lower punch and maintained segregated from the toroids.

3,771,397

SLAB GUIDE FOR VERTICALLY ADJUSTABLE SAWING APPARATUS

Leward N. Smith, Remus, Mich., assignor to Morbark Industries Inc., Urnor, Mich.

Filed June 14, 1972, Ser. No. 263,392
Int. Cl. B27b *7/02*
U.S. Cl. 83—102.1 **12 Claims**



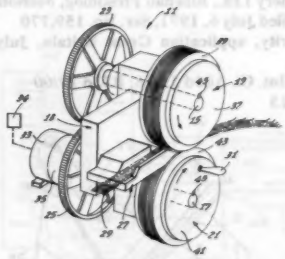
Sawing apparatus comprising a horizontally disposed vertically adjustable, saw assembly for sawing slabs from logs, a slab guide member downstream of a saw blade for vertically guiding a cut slab away from the saw blade, the slab guide member being mounted for concurrent vertical movement with the saw blade so that the slab guide member will always be in position to guide a cut slab vertically away from the saw blade.

3,771,398

APPARATUS FOR CUTTING AND SEPARATING RIBBON WIRE

John H. Schaefer, Los Angeles, and M. Andrew Rehart, Inglewood, both of Calif., assignors to Ram Products Company, Inglewood, Calif.

Filed Dec. 8, 1971, Ser. No. 205,895
Int. Cl. B26d *1/28, 9/00*
U.S. Cl. 83—302 **8 Claims**



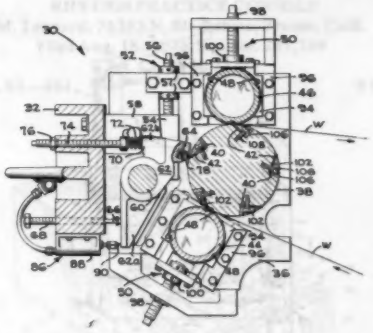
An apparatus for cutting and separating ribbon wire comprising first and second separating members with each of the separating members having at least one rib and at least one recess. At least one of the separating members has a cutting element. The separating members are mounted with the recess and rib of the first separating member generally confronting the rib and recess, respectively, of the second separating member. The first separating member is movable relative to the second separating member to cause the ribs of the separating members to force the first and second wires of the ribbon wire into the first and second recesses, respectively, to separate the first and second wires and to force the cutting element against at least one of the wires to sever such wire.

3,771,399

SHEAR CUT PERFORATOR

John S. Aterianus, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 6, 1970, Ser. No. 78,533
Int. Cl. B27d *25/12*
U.S. Cl. 83—348 **4 Claims**



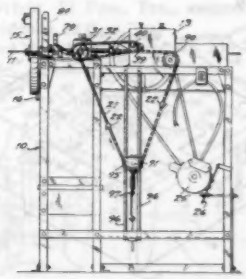
This disclosure relates to a web perforating apparatus. Essentially the apparatus includes an unwind stand for supporting and unwinding a web of material, whether it be paper, foil or plastic, which is fed over a large rotating roll carrying circumferentially spaced rows of knives or blades which extend beyond the surface of the roll. A stationary rigid beam, coextensive with and adjacent the roll, support blocks mounting anvil blades or knives embedded in or surrounded by elastomeric material. The anvil knives make contact with the roll knives to effect perforation of the web.

3,771,400

WIRE MEASURING AND CUTTING APPARATUS

Otto W. Schaefer, 2838 Alan-A-Dale, Irving, Tex.

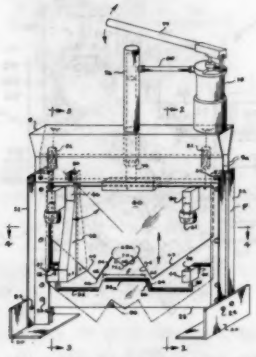
Filed Apr. 3, 1972, Ser. No. 240,412
Int. Cl. B21f *11/00*
U.S. Cl. 83—356 **10 Claims**



For feeding a continuous strand of wire and for cutting the wire into segments of a selected length, the apparatus includes powered feed rollers which feed the wire in a path past a cutter mechanism, and includes a control mechanism for actuating the cutter. The control mechanism is synchronized with the wire feed rollers to effect the actuation of the cutter mechanism after the feed of a preselected length of wire. The control mechanism includes a program chain, or a plurality of

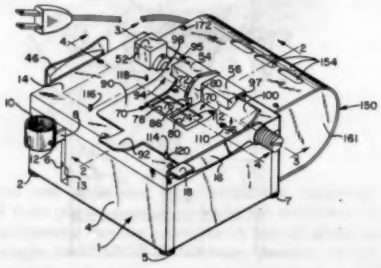
interchangeable program chains, with the program chains carrying tripping lugs mounted at selected intervals to set up the apparatus for cutting the wire into segments of selected lengths. The apparatus has means for rendering the automatic program means ineffective and for manually operating the apparatus.

3,771,401
SHEETMETAL SHEARING APPARATUS
Donald W. Jasinski, 4880 Eva St., Saginaw, Mich.
Filed Jan. 10, 1972, Ser. No. 216,381
Int. Cl. B26d *7/02*
U.S. Cl. 83—453 **17 Claims**



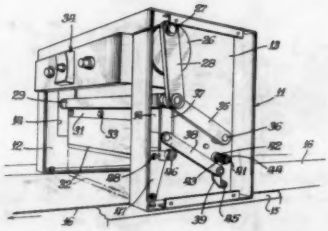
Apparatus for shearing a sheetmetal wall panel having a lateral flange portion overlying a portion of the panel base, the apparatus including a support die conforming to the contour of one side of the panel, a serrated cutting bar transversely movable toward and away from the die and the other side of the panel to initially pierce and then laterally, cut the panel in opposite directions at the same time, and a flange supporting block member movable between a remote, inoperative position and an operative position underlying the flange to prevent the flange from being distorted when it is being cut.

3,771,402
FILM NOTCHER AND CUTTER
Robert V. Bernier, Saugus, Calif., assignor to TRW Inc., Cleveland, Ohio
Filed Jan. 19, 1972, Ser. No. 219,024
Int. Cl. B26d *7/02*
U.S. Cl. 83—459 **9 Claims**



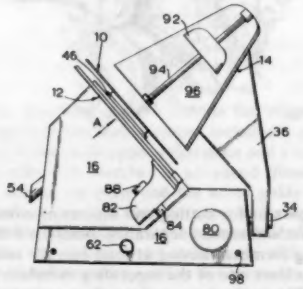
A film notcher and cutter for a roll of film carrying pairs of stereo images in which fiducial marks of a triangular nature are provided one for each image, the base of the triangle being perpendicular to the longitudinal direction of the image and at the center of the frame, the notcher and cutter providing a notcher punch arranged on a centerline slightly offset from the base line of the triangle, with a cutter bar being arranged to sever each frame from the strip at a predetermined distance from the notcher punch centerline, and the film surface of the device being provided with a pair of windows separated by a bar the width of the offset distance of the triangle base line and the notcher punch centerline.

3,771,403
DIE CUT UNIT
Alfred L. Meyer, Libertyville, Ill., assignor to Anetsberger Brothers, Inc., Northbrook, Ill.
Filed Mar. 13, 1972, Ser. No. 234,147
Int. Cl. B26d *5/16*
U.S. Cl. 83—628 **6 Claims**



Die cut unit having vertically reciprocable cutting blade with only pivotal movement and mounting of the parts, comprising parallelogram linkage maintaining blade vertical during downward cutting movement including an upper link pivotally interconnecting stationary frame and upper portion of blade, a lower link pivoted at forward end to lower portion of blade and at rear end to normally vertical link pivoted at upper end on frame to permit forward swinging of lower edge of blade by the conveyor belt upon completion of downward cutting movement, adjustable cam means to variably limit extent of forward swinging of blade and return blade to vertical position during its upward movement, and tensioning means interposed between normally vertical link and frame to resist swinging of blade comprising a friction element engaging that link, spring means exerting force against friction element, and micro-adjustment control operable during actuation of the blade to selectively vary the tension of the spring means.

3,771,404
SLICING MACHINE
Brynley Thomas Richards, and Bernard Desmond Battman, both of Merioneth, Wales, assignors to C. B. Metcalfe Food Machinery Ltd., Blaenau Ffestiniog, Merioneth, Wales
Filed July 6, 1971, Ser. No. 159,770
Claims priority, application Great Britain, July 7, 1970, 32,805/70
Int. Cl. A01d *55/18;* **B23d** *19/00*
U.S. Cl. 83—713 **6 Claims**



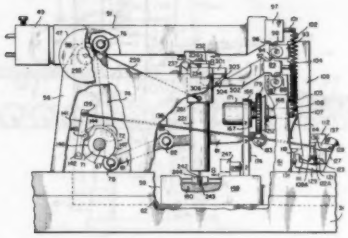
A gravity feed slicing machine for slicing bacon, ham, meat and other edible products. The supports for the fence plate,

knife and table are all mounted on a base member and enclosed within a detachable housing on the horizontal base member. This form of construction facilitates the assembly of the slicing machine. Further, the fence plate can be removed for cleaning and resecured in its correct position and setting by a user of the machine.

3,771,405
MICROTOME

Josef Blum, Norwalk, Conn., assignor to Ivan Sorvall, Inc., Newton, Conn.

Filed Sept. 8, 1972, Ser. No. 287,583
Int. Cl. G01n *1/06*
U.S. Cl. 83—714 **42 Claims**

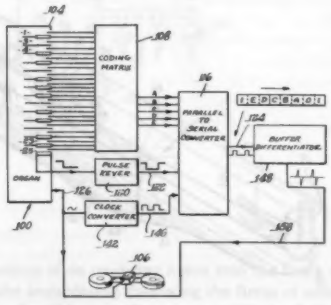


An improved microtome, including novel mechanisms for incrementally advancing the specimen supporting canti-lever arm toward the stationary cutting knife for producing successive specimen sections during the cutting stroke of said arm, and novel means for retracting the cantilever arm during the return stroke thereof to cause the specimen to bypass the cutting knife prior to the next cutting cycle. The cantilever arm is articulated upon a fulcrum which is movable on a compound multiple pivoting system, the component parts of which are selectively separately and jointly operable to cause said arm to advance and retract alternately during each cutting cycle thereof, and to produce a net predetermined incremental advance of the specimen for each of said cycles.

3,771,406
MUSICAL INSTRUMENT WITH DIGITAL DATA HANDLING SYSTEM AND LIGHTING DISPLAY

Robert W. Wheelwright, Buffalo, N.Y., assignor to The Wurlitzer Company, Chicago, Ill.

Filed Aug. 10, 1971, Ser. No. 170,489
Int. Cl. A63j *17/00*
U.S. Cl. 84—464 **12 Claims**

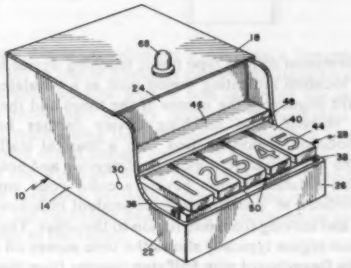


A data handling system has an arrangement in which input data may be recorded and/or displayed in analog form while at the same time the data is encoded in digital form on a storage or memory medium, such as magnetic tape. When the memory medium is operated for retrieval of the encoded data, the data is converted to one analog form for display while at the same time the originally recorded analog form may also be displayed, whereby two analog displays result. The system is described as embodied in an electronic organ and may be used as a teaching device wherein a series of electric lamps are mounted respectively above a series of organ keys. A key may be depressed causing the audio to be heard. At the same time audio is recorded along with data in digital coded form representing the key. Upon playback the audio is reproduced to constitute one analog form and the decoding circuitry causes the lamp associated with the key to be illuminated to provide the second analog form.

3,771,407
RHYTHM PRACTICE CONSOLE

Verna M. Leonard, 76353 N. Blackstone, Fresno, Calif.

Filed Aug. 18, 1972, Ser. No. 281,709
Int. Cl. G10b *15/00*
U.S. Cl. 84—484 **8 Claims**

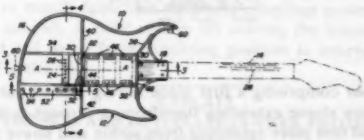


Apparatus for instruction and practice in musical rhythm, tempo, beats and the like, including that in relation to percussion instruments and dance rhythms, operated by the fingers and capable of relatively loud and sharp auditory signals in the electrified form which also includes means to produce a light flash, synchronized with each sound produced, to add the visual impression as a teaching technique and for dramitization of the development of skill in achieving accurate periodicity or timing in both simple and more complex musical rhythms and dance steps.

3,771,408
GUITAR BODY

Richard O. Wright, El Paso, Tex., assignor to Juanell L. Wright Individually, El Paso, Tex.

Filed Mar. 17, 1972, Ser. No. 235,764
Int. Cl. G10d *3/00*
U.S. Cl. 84—291 **11 Claims**

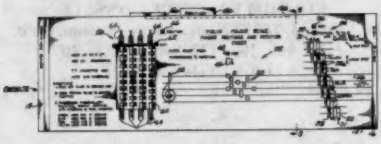


A body for an electric guitar has an uncovered, skeletal frame. The frame is provided with a pocket for receiving a guitar neck, and a bridge and tailpiece arranged for receiving strings from a guitar neck arranged in the pocket. The frame is further provided with devices for selectively mounting electronic pickups thereon, as is a mount for suitable control elements.

3,771,409
MUSIC TEACHING DEVICE WITH A COLOR COORDINATED FINGERBOARD REGION AND COLOR CORRELATED FINGERBOARD REGION AND COLOR CORRELATED FINGERBOARD AND NOTATION REGIONS

James C. Rickey, 14634 S.E. 21st St., Bellevue, Wash.

Division of Ser. No. 750,057, Aug. 5, 1968, Pat. No. 3,554,074.
This application Dec. 30, 1970, Ser. No. 102,860
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 5 Claims

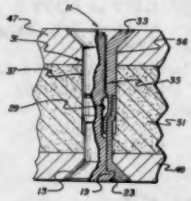


An information display type music teaching device having a fingering location indicating region such as a simulated violin fingerboard displaying the names of the tones and the proper fingering thereof, said teaching device further having a graphic notation region aligned with a musical staff drawn through the key signature region, the fingering and notation in the graphic notation region having a color code and being color correlated to visually assist the student in following the fingering and moving from one region to the other. The fingering location region typically shows the tone names on a simulated violin fingerboard with half step spacing from the nut on each string and, in addition to the tone names, also shows the fingering adjacent to the tone names for a variety of Major Scales and fingering Positions correlated with the key signature region and the graphic notation region.

3,771,410
FASTENER

Joseph K. Swindt, II, Manhattan Beach, Calif., assignor to VSI Corporation, Pasadena, Calif.

Filed May 1, 1972, Ser. No. 249,685
Int. Cl. F16b *5/01, 13/06, 19/10*
U.S. Cl. 85—1R 9 Claims

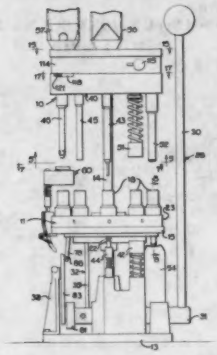


A fastener comprising a first piece having a head portion and a hollow sleeve extending therefrom, a through-bolt affixed to said first piece extending from within said sleeve portion, the through-bolt having a peripheral recessed groove formed therein, a second hollow piece comprising a head having a sleeve integrally formed therewith, wherein the sleeve portion of said second piece surrounds a portion of said through-bolt and extends toward the sleeve of said first piece such that when said second piece is forced to move relative to said first piece on said through-bolt the sleeve portion of said first piece deforms the sleeve of said second piece into the peripheral groove.

3,771,411
SHOTGUN CARTRIDGE LOADING MACHINE

Jan Vanden Hazel, Sheridan, Oreg., assignor to Ponsness-Warren, Rathdrum, Idaho

Filed July 3, 1972, Ser. No. 268,563
Int. Cl. F42b *33/10*
U.S. Cl. 86—27 8 Claims

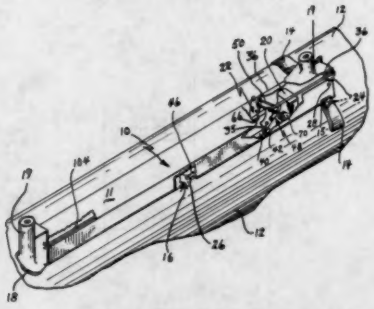


A manually operable shotgun cartridge loading machine is described for progressively resizing and loading spent shotgun cartridges. The machine includes an upright pair of standards slidably receiving a cartridge supporting turret. Cartridges are held within a plurality of resizing and supporting dies radially and angularly spaced on the turret about a vertical axis. An indexing means is utilized to index the cartridges a set increment about the axis as the turret is manually raised to bring the cartridges into operative engagement with a complementary set of similarly spaced stationary tools. A tool head is fixed at the upper end of the standards for supporting the downwardly projecting tools.

3,771,412
MISSILE LAUNCHER

Bernard Lebovitz, Hazelwood, Mo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 18, 1972, Ser. No. 245,061
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.807 7 Claims



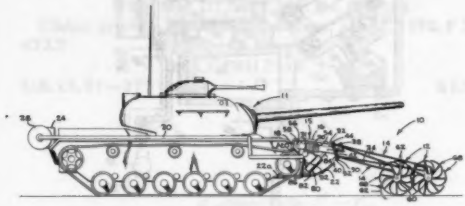
A missile launcher incorporating therein a novel locking arrangement, ejector means, firing system, energizing means and stray energy monitors. This series of elements function as a new combination providing a more reliable apparatus for securing a missile to an aircraft and, which is capable of, at a predetermined time thereafter, releasing the missile.

3,771,413

MINE NEUTRALIZATION DEVICE

Richard A. Sieg, San Jose, and Charles D. De Palmo, Campbell, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 1, 1972, Ser. No. 249,376
Int. Cl. F41h *11/12*
U.S. Cl. 89—1 M 4 Claims



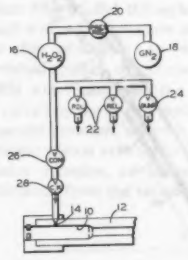
A tank mountable mine neutralization device including blast transparent wheels which are rotatably mounted upon the distal ends of blast transparent booms. A pneumatic actuator and energy absorbtion system is coupled to the booms to transfer a part of the tank weight onto the wheels and to dissipate any energy absorbed from the mine blast. The wheels are positioned on the ground at a safe distance ahead of the tank for the purpose of pressure actuating land mines over which the wheels roll when the tank advances.

3,771,414

APPARATUS FOR A GUN PURGING SYSTEM

Alfred R. Graham, Burnt Hills, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 26, 1971, Ser. No. 202,149
Int. Cl. F41d *11/18*
U.S. Cl. 89—1 E 1 Claim



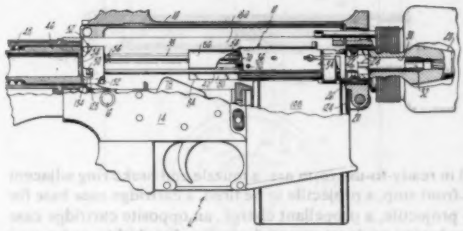
The injection of an oxidizing agent into the firing chamber of a gun tube immediately following the firing of ammunition having a combustible cartridge case provides a relatively large quantity of oxygen to facilitate combustion of any unburned or partially unburned fragments of the case. Hydrogen peroxide is uniquely suited to this application since it may be decomposed into high temperature oxygen and superheated steam; the high temperature oxygen serves as an unusually good oxidizing agent and the superheated steam provides an excellent means for cleaning the internal surfaces of the gun tube.

3,771,415

RIFLE CONVERSION ASSEMBLY

Henry A. Into, and Richard L. Costello, both of Hartford, Conn., assignors to Colt Industries Operating Corp., Hartford, Conn.

Filed Feb. 7, 1972, Ser. No. 224,208
Int. Cl. F41c *21/12*
U.S. Cl. 89—16 8 Claims



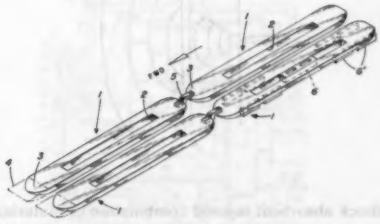
An assembly is provided for converting a firearm of standard caliber to one of a smaller caliber and includes a conversion chamber adaptor with a bolt mounted for movement between recoil and battery positions. A backplate damper assists in maintaining the operating components in assembly and absorbs recoil impact energy of the recoiling mass upon firing of the weapon. When the conversion assembly is installed in a weapon having a buffer disposed rearwardly of its chamber, the backplate damper additionally serves to transmit that energy to the buffer.

3,771,416

REMOVABLE WEAPONS RAIL

William H. Ackerman, Jr., East Islip; Emery Fischer, and Gerald L. Caruso, both of Levittown, all of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 22, 1971, Ser. No. 182,611
Int. Cl. B64d *1/04*
U.S. Cl. 89—1.5 R 6 Claims



A removable weapons rail which is adaptable for bomb racks or missile launchers. Standard couplings mount the rail to an aircraft. A hoist system for moving the loaded or unloaded rail to or from mounting position is internally contained in the rail.

3,771,417

RECOILLESS AND DETONATION-FREE PROJECTILE FIRING DEVICE

Werner Schnabele, Wolfratshausen; Fritz Zeyher, Ottobrunn, and Dieter Weis, Neubiberg, all of Germany, assignors to Messerschmitt Bolkow Blohm GmbH, Ottobrunn near Munich, Germany

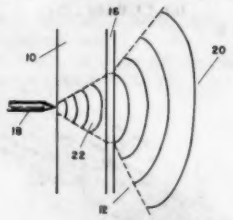
Filed Aug. 9, 1972, Ser. No. 279,257
Claims priority, application Germany, Aug. 14, 1971, P 21 40 875.3
U.S. Cl. 89—1.701 4 Claims

A recoilless and detonation-free projectile firing device comprises a tube having a front muzzle end with an inturned

flange portion defining a front end stop and a rear end with a cap secured thereto with an inturned flange which defines a rear end stop. The tube contains a cartridge case made of an elastic material of a low modulus of elasticity which has an outer diameter which permits it to be snugly fitted within the interior of the tube. Arranged within the cartridge case from the front muzzle end toward the opposite rear end in order

and in ready-to-use form are: a muzzle end brake ring adjacent the front stop, a projectile to be fired, a cartridge case base for the projectile, a propellant charge, an opposite cartridge case base having an inert material of easy divisibitlity and a rear end braking ring. All of the elements are combined in the cartridge case and are hermetically sealed therein by diaphragms which are secured to each end of the case.

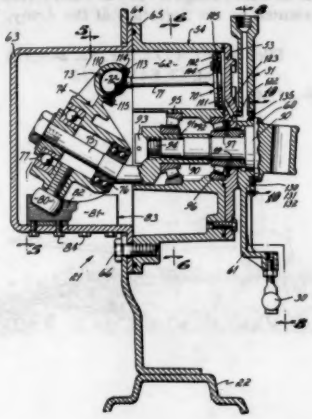
3,771,418
ANTI-SPALL LIGHTWEIGHT ARMOR
Joseph E. Gulbierz, and Charles F. Bohan, both of Wharton, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sept. 29, 1971, Ser. No. 184,845
Int. Cl. F41h *5/04*
U.S. Cl. 89—36 A **4 Claims**



A shock absorbent layered combination of materials, comprising: an outer layer possessing a tensile strength of between 10^4 and 10^6 pounds per square inch and an elastic modulus of between 10^5 and 10^8 pounds per square inch; and a deformable inner layer rigidly adhered to said outer layer, wherein the material constituting said outer layer possesses both a higher tensile strength and a higher elastic modulus than the material constituting said inner layer.

3,771,419
STEAM DRIVEN VEHICLE AND STEAM ENGINE THEREFOR
Robert W. Hyde, 1 Pulter Pl., Crystal River, Fla.
Filed Dec. 14, 1970, Ser. No. 97,780
Int. Cl. F01b *1/00, 3/00*
U.S. Cl. 91—6.5 **11 Claims**

A swash plate type steam engine having its block fixed to a vehicle wheel for rotation therewith and a plurality of pistons extending generally parallel to the axle of the wheel, the cylinders being supplied with steam from a normally fixed distribu-



tion plate which is urged into engagement with the rotating block by the steam under pressure.

3,771,420
LIQUID CONTROL DEVICE
Michael E. Buchtel, 22311 Modina, La Guna Hills, Calif.
Filed Mar. 20, 1972, Ser. No. 236,051
Int. Cl. F01l *25/08*
U.S. Cl. 91—49 **9 Claims**

A liquid pulsator is described by which a flow of fluid is repeatedly interrupted and delayed and thus converted to a train of liquid pulses. The pulses are formed by opening and closing a valve placed in a fluid flowpath. The embodiments illustrated utilize magnetic forces to accomplish valve actuation and employ a pressure differential across the valve to render the magnetic elements effective. In a cyclic manner, change in the pressure differential across the valve element, incident valve opening and closing, imparts motion to the valve elements from an initial location subsequent to valve closing, and allows the valve elements to be moved to the initial location subsequent to valve opening. A spring stores energy in one direction while delaying fluid flow, and then moves the valve elements to the initial location in the opposite direction during

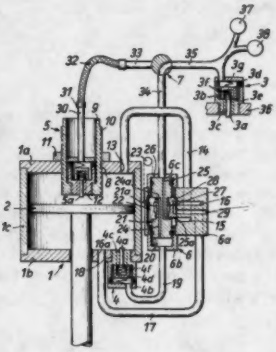
fluid flow. By this expedient, inlet pressure which ordinarily tends to produce only chatter when interrupted by rapid valve opening and closing, is employed to accomplish a more controlled valve actuation.

3,771,421

THRUST PISTON MOTORS

Harry Scheffer, Brackwede, Germany, assignor to Harry Kruger GmbH, Brackwede, Germany

Filed Mar. 31, 1971, Ser. No. 129,756
Claims priority, application Germany, Apr. 1, 1970, P 20 15 472.7
Int. Cl. F01l *25/06, 31/00*
U.S. Cl. 91—277 **6 Claims**



A control device for a thrust piston motor consisting of two normally closed auxiliary control valves and one main control valve, controlled by the auxiliary control valves, and containing a control piston adapted to be displaced by the action of the fluid medium and a control slide coupled with the control piston for controlling the direction of movement of the motor piston, and wherein the control pressure chambers are each connected by a bore provided in the control piston and a supplementary valve means connected to the control piston, with a pressure medium source and through one of the auxiliary control valves each with a low pressure zone the improvement comprising that for obtaining an externally controlled sequence of individual strokes, one control valve (first control valve) is operable externally and the other control valve (second control valve) by the motor piston during the passage through a dead centre position, wherein there is mounted, on the side of the motor piston remote from the second control valve in the motor cylinder, an abutment stop in such a manner that its distance from the second control valve is variable.

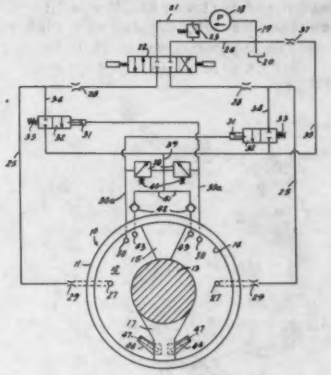
3,771,422

AUTOMATIC PRESSURE RELIEF AND SNUBBING IN HYDRAULIC ACTUATORS

Gordon W. Kamman, Elma, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Oct. 13, 1971, Ser. No. 188,756
Int. Cl. F15b *15/22, 13/042, 11/08*
U.S. Cl. 91—405 **18 Claims**

Rapid start-up acceleration is automatically attained by pressure relief provided for the discharge chamber through a dump valve referenced to the drive chamber of the actuator. Deceleration is accomplished by snubbing hydraulic fluid discharge and by diverting pressure directly from the hydralic feed line. Negative pressure relief or anti-cavitation is provided for in the hydraulic system of the actuator. A novel, efficient snubber valve is carried by the actuator piston to control hydraulic fluid passing through the discharge port of the actuator.

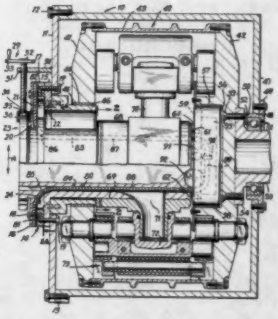


3,771,423

RADIAL PUMP OR MOTOR WITH STABILIZED PINTLE

Donald L. Culberson, Teaneck, N.J., assignor to Jaromir Tobias, New York, N.Y.

Continuation of Ser. No. 119,461, March 1, 1971, abandoned. This application June 1, 1972, Ser. No. 258,812
Int. Cl. F01b *1/06*
U.S. Cl. 91—497 **13 Claims**



A pintle stabilizer for radial piston pumps or motors adapted to stabilize the "blind" end of the pintle shaft, i.e., the end remote from the end through which fluids are introduced and discharged. The stabilizer mechanism is characterized by the transmission of pintle stabilizing forces axially through access bores extending through one or more of the segments of the pintle coinciding with a plane directed through the land areas defining the pintle charge and discharge manifolds.

The forces transmitted through the access bores are reacted between the remote end of the pintle and a pintle bearing block or the like whereby the tendency of the remote end of the pintle to be deflected in the course of rotation of the cylinder block relative to the pintle is resisted.

3,771,424

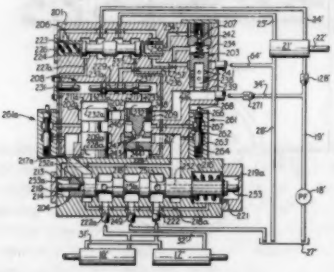
HYDRAULIC FLOW AMPLIFIER VALVE

Thomas E. Allen, East Peoria; Gordon W. Johnson, Joliet; Richard L. M. Sears, Washington; Chester L. Strantz, East Peoria, and John B. Waggoner, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 712,747, March 13, 1968, Pat. No. 3,566,749. This application Nov. 2, 1970, Ser. No. 86,305

Int. Cl. F15b *11/16*, *13/042*, *13/06*

U.S. Cl. 91—446 3 Claims



A hydraulic flow amplifier valve assembly for regulating fluid flow to steering jacks. A steering control valve receives fluid directly from a pump and is pilot operated by fluid from a conventional metering unit to provide amplified flow of pump fluid to the jacks. A blocker valve passes fluid from the steering valve during steering motion of the jacks and otherwise isolates the jacks to prevent fluid loss. A lock valve protects against steering wheel slippage during overpressure conditions and also permits pilot fluid provided by the metering unit to operate the steering jacks in the event of pressure failure.

3,771,425

CARDBOARD BOX BLANK AND APPARATUS FOR MAKING THE SAME

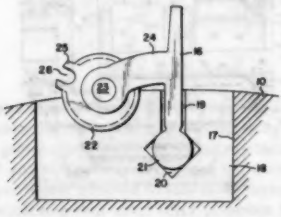
Masaharu Matsuo, No. 17-3, 3-Chome Higashikomagata, Sunida-ku, Tokyo, Japan

Filed Aug. 25, 1971, Ser. No. 174,789

Claims priority, application Japan, Sept. 30, 1970, 45/84965

Int. Cl. B31b *1/14*

U.S. Cl. 93—58.2 R 5 Claims



A cardboard blank for a box is approximately rectangular, has two rows of crease sections elongated spacedly parallel to the long edges of the rectangle, and two groups of three slots extending inward of each edge to the nearer row of crease sections. The crease sections are longitudinally consecutive, but transversely offset from each other by about the thickness of the blank so that the flap portions of the blank may be folded over each other in making the box without interfering with each other. The apparatus employed for making the blank has paired rollers, one roller of each pair carrying circumferential cutting blades and an axial row of creasing blades axially interposed between the cutting blades and circumferentially adjustable to produce the desired offset of the crease sections.

3,771,426

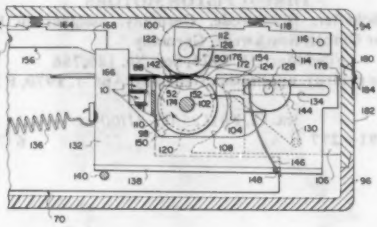
MOVABLE STRIPPING AND GUIDING MECHANISM

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 5, 1972, Ser. No. 268,936

Int. Cl. G03b *19/10*

U.S. Cl. 95—13 23 Claims



A film handling mechanism in a processing camera for relatively deflecting processing waste materials away from an image-recording section of a self-processing film unit to separate the waste materials from the image-recording section after the initiation of processing. The mechanism includes a pair of pivotally mounted fingers for deflecting the waste materials into a first path toward a collecting chamber in one position of the fingers and for directing the image-recording section along a second path exiting from the camera in another position of the fingers.

3,771,427

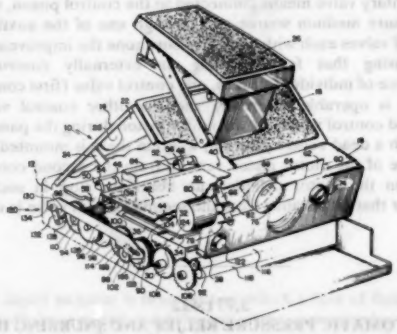
REFLEX CAMERA WITH MIRROR LATCH

Igor Blinow, Millis, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 2, 1972, Ser. No. 222,964

Int. Cl. G03b *19/12*

U.S. Cl. 95—42 19 Claims



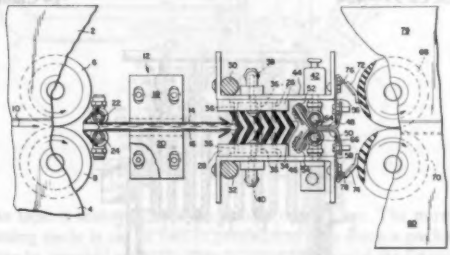
A latching arrangement for use within a reflex photographic apparatus having a reflecting member which is movable to convert an optical path between viewing and exposure configurations. The latching arrangement is movable into latching association with the reflecting member for securing the same at its viewing position, and selectively movable out of its latching association for permitting the movement of the reflecting member.

3,771,428

APPARATUS FOR PROCESSING TWO SIDES OF A PRINTING PLATE

Ellwood J. Horner, Armonk, N.Y., and Eugene J. Gaisner, Sparta, N.J., assignors to Azoplate Corporation, Murray Hill, N.J.

Filed Oct. 21, 1971, Ser. No. 191,191
Int. Cl. G03d 3/02
U.S. Cl. 95—89 R 13 Claims



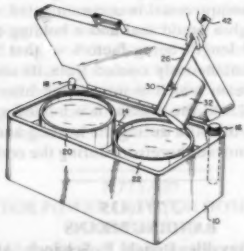
An apparatus for processing two sides of a printing plate. The apparatus includes a chamber for pre-soaking both sides of a printing plate with developer, reciprocatable opposed brushes mounted adjacent the pre-soaking chamber and adapted to contact both sides of the plate, and opposed scrubber pads mounted adjacent the brushes.

3,771,429

DEVICE FOR HOLDING PHOTOGRAPHIC PAPER DURING PHOTOGRAPHIC PROCESSING OPERATION

Samuel Pavelle, White Plains, N.Y., and Ronald Bernard Johnstone, Roseland, N.J., assignors to The Parelle Corporation, New York, N.Y.

Filed Feb. 25, 1972, Ser. No. 229,357
Int. Cl. G03d 1/04
U.S. Cl. 95—100 5 Claims



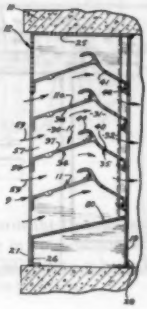
A device for holding photographic paper during a photographic processing operation comprises an elongated handle member having retention members mounted thereon for holding the paper in a roughly cylindrical or curled form. These retention members may comprise paper-retention clips, a single ring secured to the handle, or a plurality of rings vertically stacked to form a basket. The paper is held with the emulsion side facing inwardly during processing and the handle extends beyond the bottom and top edges of the paper.

3,771,430

LOUVER ASSEMBLY

Robert W. Lane, Marietta, Ohio, assignor to The Airolite Company, Marietta, Ohio

Filed Mar. 10, 1972, Ser. No. 233,535
Int. Cl. E24f 13/06; E06b 9/01; B01d 45/00
U.S. Cl. 98—121 R 13 Claims



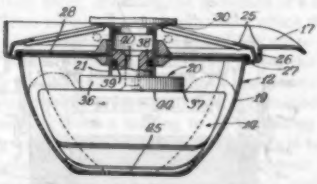
An assembly of louver blades attached to a frame for positioning in a ventilating opening provided in the wall of a building and defining an air handling device through which air is free to flow. The louver blades may be disposed in either horizontal or vertical orientation. The flowing air traverses passageways defined by the louver blades, and eventually exits said passageways on the side opposite of its original entrance. Raindrops, which may have accompanied the air stream as airborne free water, are extracted to an acceptable degree through natural gravitational forces and other means whereby said water is caused to be deposited upon the surfaces of the louver blades. Drainage means are provided whereby the water is effectively drained from the louver blades to the exterior of the louver assembly and falls harmlessly to the ground.

3,771,431

BEVERAGE BREWING APPARATUS

Milton F. Ehrenberg, Jr., Carpentersville, Ill., assignor to Cory Corporation, Chicago, Ill.

Filed Apr. 6, 1972, Ser. No. 241,536
Int. Cl. A47j 31/00
U.S. Cl. 99—295 12 Claims



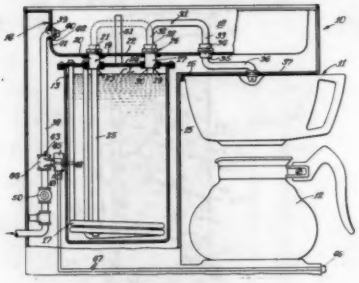
A brewing device, such as a coffee brewer, wherein the hot water is delivered to the brewing chamber through a fixed inlet tube with the charge of beverage ingredients being provided in a bag and held in the brewing chamber suitably to expand against the outer end of the inlet passage means thereby to form a sealed connection permitting the brewing liquid to enter directly through the wall of the bag into the charge material. The beverage is then brewed by the water within the bag and the resultant brew passes outwardly from the bag for delivery to a receiving means such as a decanter. The outlet of the water delivery means is caused to define a flat surface against which the bag is urged as a result of the swelling of the bag caused by the delivery of the hot water thereinto.

3,771,432

HOT WATER SUPPLY APPARATUS

Harvey R. Karlen, Chicago, Ill., assignor to Cory Corporation, Chicago, Ill.

Filed Sept. 28, 1971, Ser. No. 184,524
Int. Cl. A47j 31/00
U.S. Cl. 99—304 16 Claims



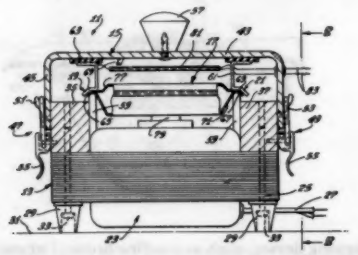
An apparatus for delivering hot water to a receiver, such as a coffee brewer cartridge, which is selectively arranged to provide hot water from a heating tank comprising a portion of the apparatus as an incident of either the delivery of cold water to the heating tank by pouring of the cold water into a basin adjacent the heating tank, or delivery of cold water from a source thereof under pressure through a valve controlled conduit adapted to deliver the cold water also into the basin. The basin is selectively connected to the heating tank or to the brewing cartridge providing improved selective operation of the apparatus in a plurality of different modes.

3,771,433

FOOD HEATING DEVICE

Leonard Tony King, Long Beach, Calif., assignor to Speedine Partnership, San Francisco, Calif.

Division of Ser. No. 48,209, June 22, 1970, Pat. No. 3,669,003, which is a continuation-in-part of Ser. No. 629,315, April 7, 1967, abandoned. This application Jan. 28, 1972, Ser. No. 221,770
Claims priority, application Canada, June 4, 1971, 114841
Int. Cl. A47j 27/62
U.S. Cl. 99—331 11 Claims



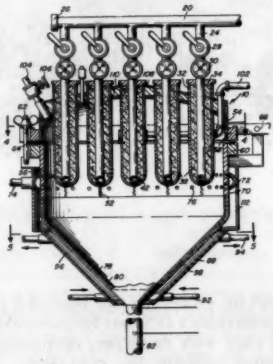
This disclosure describes a food heating device for heating and cooking food items such as TV-dinners which are prepackaged in standard electrically conductive containers. The device includes a rigid enclosure having a base and a cover for providing access to the interior of the enclosure to allow insertion or removal of the food package. The food package is supported on the base and, a step-down transformer supplies low voltage electrical power to the conductive food package. First and second clamps are supported by the enclosure means and clampingly engage first and second edge portions of the conductive food package, respectively, so that the electrical current passes direcly through the food package and at least some of the food contained therein to rapidly and efficiently heat the food.

3,771,434

MILK STERILIZING APPARATUS

Elmer S. Davies, Takoma Park, Md., assignor to Dosi Industries Inc., Washington, D.C.

Filed July 3, 1972, Ser. No. 268,873
Int. Cl. A23c 3/02
U.S. Cl. 99—454 14 Claims



A sterilizing apparatus for fluent materials, particularly milk, for raising the temperature of the material to a sterilizing temperature in a very short period of time and then discharging the material for substantially instantaneous cooling to enable the sterilization to occur without adverse affect on the natural flavor and stability of the milk or other material. The sterilizing apparatus includes a pressure vessel communicated with a steam source and also includes a milk inlet pipe which introduces milk into the vessel through insulated distribution pipes for equal volume inlet through a plurality of horizontally disposed slot-like openings so that the milk will be discharged into the vessel in the form of a plurality of thin films. A depending screen may be provided in each of the slot-like openings so that milk will be discharged along the surface of the screen to form a thin film and assure that each particle of milk is identically heated to ensure complete sterilization. The bottom of the pressure vessel is coated with an inert plastic material to prevent any buildup of milk on such surfaces. The bottom of the pressure vessel is communicated with a source of vacuum through a liquid seal and a holding tube with the holding time and length being factors so that the sterilized milk will be instantaneously cooled from its sterilizing temperature. The stream which is introduced into the pressure vessel is absorbed into the milk as it is heated and the steam that was added to the milk during the heating and sterilization process will be removed therefrom during the cooling process.

3,771,435

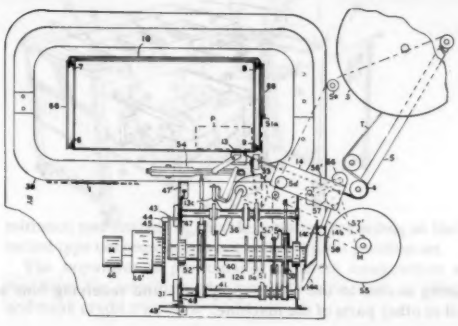
BANDING MEANS

Mario Vascotto, Bayville; Donald E. Schanck, Albertson, and Floyd A. Lyon, Brookville, all of N.Y., assignors to Halm Instrument Co., Inc., Glen Head, N.Y.

Continuation-in-part of Ser. No. 80,071, Oct. 12, 1970, Pat. No. 3,665,845. This application Oct. 14, 1971, Ser. No. 189,171
Int. Cl. B65b 13/10
U.S. Cl. 100—4 11 Claims

A banding machine having a driven chain encircling a banding station which is adapted to receive articles or packages. Four fingers are pivotally mounted on the corners of the band-

ing station. A clamp on said chain grips the end of the banding tape and pulls the tape around and over the fingers. The fingers are then retracted and slack in the tape is taken up, and



the tape is sealed around the article or package. The normal timing cycle is cut in half in production runs since a package may be inserted while the tape is being fed around the fingers.

3,771,436

DEVICE FOR CUTTING AND WELDING PLASTIC BAND FOR USE IN AUTOMATIC STRAPPING MACHINE

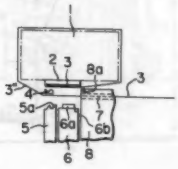
Yoshimasa Sato, Kanagawa, Japan, assignor to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1971, Ser. No. 198,855

Claims priority, application Japan, Dec. 26, 1970, 45/140533; Dec. 26, 1970, 45/140532

Int. Cl. B65b *13/32*

U.S. Cl. 100—33 PB **7 Claims**



A device for cutting and welding a plastic band for use in an automatic strapping machine, which comprises: a table provided with a cutting and welding mechanism thereunder; an upper band holding member which is supposed to hold the tip of the strapping band when said band is completely fed to cover the full length of the bottom of the table; a lower band holding member having a projection, which is disposed under the upper band holding member; and pectinate heat blades which are supposed to melt and penetrate the overlapped two portions of the band and thereafter weld them by the energy of a press member.

3,771,437

HEAT MOTOR POWER UNIT FOR DOMESTIC WASTE COMPACTOR

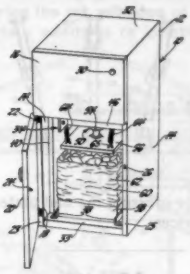
Byron L. Brucken, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 1, 1972, Ser. No. 258,567

Int. Cl. B30b *15/22*

U.S. Cl. 100—52 **4 Claims**

A refuse compactor having an electrically controlled heat motor compacting means characterized by a refuse compacting ram movable in a main chamber which is subdivided by a resilient sleeve into concentric outer and inner annular cavities with the outer cavity containing thermally-responsive material and the inner cavity containing hydraulic fluid. As the thermal material expands under the influence of a heating element therein the hydraulic fluid is compressed within the sleeve to force the ram in a waste compacting direction. A



regulating valve controls the flow of the hydraulic fluid to and from an accumulator in conjunction with the energization of the heating element providing substantially instant return of the ram to its full cycle position.

3,771,438

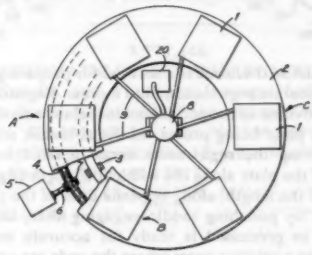
MEANS FOR MOLDING

Louis Radakovich, 13324 Green Dr., Chesterland, Ohio

Filed Oct. 12, 1971, Ser. No. 188,236

Int. Cl. B30b *5/00*

U.S. Cl. 100—178 **8 Claims**



The disclosure herein is of a means of molding, primarily directed to the art of urethane or similar plastic molding wherein pressures are relatively low and the time and pressure cycle is relatively short, involving the provision of a conveyor upon which press members are supported in which the molds are in turn positioned, the presses being connected to a central source of air pressure which is maintained during the molding cycle, making possible the continuation of the connection during such cycle whereby pressure may be maintained therein, the presses moving from a loading to an unloading position and returning within a minimum area, the presses in turn being of simple, compact construction whereby to reduce the total cost of the mechanism, with added efficiency and control being provided.

3,771,439

ROOF TRUSS FORMING MACHINE

Edgar A. Mort, 128 College Ln., Youngstown, Ohio

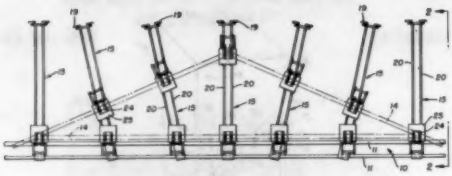
Filed Aug. 14, 1972, Ser. No. 280,661

Int. Cl. B30b *1/32, 7/00*

U.S. Cl. 100—100 **7 Claims**

A roof truss forming machine for assembling and nailing with nail plates timbers into a planar roof truss includes a stationary elongated track and a plurality of adjustably positioned support arms extending laterally therefrom and pivotally secured thereto. Each of said support arms having at

least one clamping device adjustably positioned thereon each of said clamping devices incorporating a hydraulically



operated C-clamp for pressing the nail plates into the timbers supported by the devices.

3,771,440

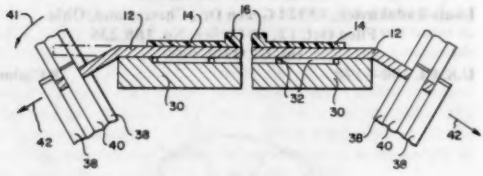
PROCESS OF PREPARING A PRINTING PLATE FOR ACCURATE REGISTRATION

William H. Eburn, Jr., 107 Hills Point Rd., Westport, Conn.

Filed Feb. 29, 1972, Ser. No. 230,249

Int. Cl. B21d *43/28*; B41f *27/06*

U.S. Cl. 101—1 **1 Claim**



The invention disclosed is a method for preparing a printing plate for accurate registration onto a press. Registration areas are first provided in proper alignment relative to the printing area of the plate being processed. Next, means are provided for positioning the registration areas in fixed location for shearing of the plate along the width and length edges thereof. Shearing of the length, along opposite ends of the plate, is accompanied by punching saddle engaging slots, and binding. The plate so processed is ready for accurate introduction directly onto a printing press where the ends are conveniently secured in place about a saddle.

3,771,441

MULTIPLE TAPE PRINTING APPARATUS AND HOUSING FACILITY THEREFORE

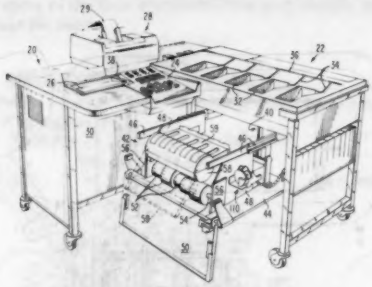
Harry L. Wallace, Garden City, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 139,385, May 3, 1971, Pat. No. 3,704,666. This application Aug. 2, 1972, Ser. No. 277,380

Int. Cl. B41f *19/00*; G01d *9/00*

U.S. Cl. 101—2 **19 Claims**

A serial-type printing mechanism and more particularly a multiple tape lister machine normally retractably housed within a unit or console forming part of a document handling system. The printing mechanism includes a row of individual tape printers each containing a continuously rotatable print drum carrying print characters on its periphery and each further including a print impact hammer associated with each drum, the hammers being mounted on a common carrier for reciprocal motion in unison across the tapes which are fed to the printers. The printing mechanism also includes a row of tape supply rolls and tape receiving bins in superposed relation to one another, each tape being guided and fed from the former through an individual one of the printers to an individual one of the bins. In a particular embodiment, the multiple tape lister machine is housed within a compartment of a document sorting unit underneath the sorting pockets thereof and is reciprocatingly mounted for bodily movement from the compartment to an exposed condition external of the unit for



gaining access to the tape supply rolls and receiving bins as well as other parts of the machine.

3,771,442

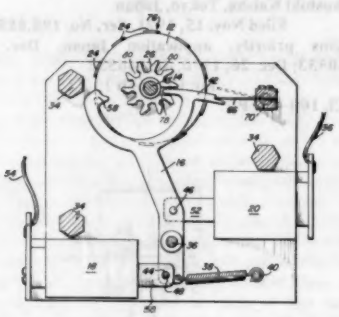
ZERO-LOCK PRINT WHEEL APPARATUS

John L. Ditman, Beltsville, Md., assignor to Penril Data Communications, Inc., Rockville, Md.

Filed Jan. 11, 1972, Ser. No. 216,931

Int. Cl. B41j *1/28*

U.S. Cl. 101—99 **17 Claims**



An electromechanical apparatus for imprinting a six digit number on a charge receipt. Six geared print wheels are rotatably mounted on a common shaft and each wheel associates with an electromagnet activated camming arm. For each impulse of an electromagnet, the associated print wheel is rotated about its axis for one-tenth of a turn. A zero-lock mechanism is provided so that upon the activation of the print wheel electromagnets for a predetermined number of times without the activation of a zero-lock electromagnet, each print wheel is positively reset to zero. The print wheels are restrained against movement in the absence of an activating pulse to the print wheel electromagnets.

3,771,443

DOCUMENT MONITOR BY LIGHT TRANSMITTANCE FOR ENABLING PRINTER

Constantine Andreas Georghallis, London, England, assignor to English Numbering Machines Limited, London, England

Filed Oct. 18, 1972, Ser. No. 298,763

Claims priority, application Great Britain, Nov. 3, 1971, 51,102/71

Int. Cl. B41j *13/26*

U.S. Cl. 101—93 R **8 Claims**

The invention is concerned with the feeding of sheet material into a printing machine which can be set to print in a plurali-

ty of print positions corresponding to a plurality of types of document.

The invention provides a feeding mechanism which monitors the type of document present by means of its light trans-

mittance and enables or disables printing according as the detected type corresponds or not with the print position set.

The apparatus is particularly useful in conjunction with machines for printing codes on documents such as cheques and bank credit transfers.

3,771,444

DEVICE FOR SELECTIVELY SETTING TYPE BARS OF CALCULATING MACHINES

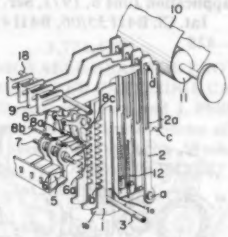
Takashi Murakami, Setagaya-ku, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Sept. 21, 1970, Ser. No. 73,897

Claims priority, application Japan, Sept. 24, 1969, 44/91219

Int. Cl. B41j *5/46, 25/00*

U.S. Cl. 101—94 **2 Claims**



In a calculating machine of the type disclosed when no numeral or decimal point is printed, no signal is transmitted to the printing device or non-printing signals are transmitted thereto so that a type bar is lifted to its uppermost position. In this position, a type bar stopper provided upon a guide plate which serves to prevent the lateral vibrations of the type bar and to guide a hammer engages with an engaging member formed upon the type bar. In consequence, the type bar is prevented from striking a paper, that is, is locked in non-printing position. The conventional type bar locking elements may be eliminated.

3,771,445

METHOD FOR DECORATIVELY SILK SCREEN PRINTING CANDLES

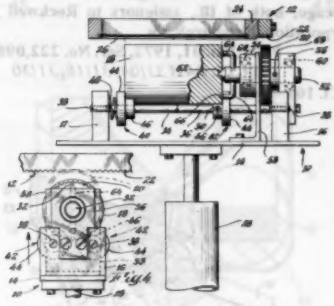
John Scott Campbell, Sandy Hook; Philip H. Deming, Wilton, and Aaron M. Epstein, Fairfield, all of Conn., assignors to Universal Laboratories, Incorporated, Bridgeport, Conn.

Filed Jan. 17, 1972, Ser. No. 218,289

Int. Cl. B41f *17/22*

U.S. Cl. 101—129 **2 Claims**

Methods and apparatus for silk screen printing of candles and candle compositions for improving the ink adhesion of the candles. The silk screen apparatus includes a candle carriage having a plurality of rollers for supporting a candle and a gear driven by a toothed rack attached to the silk screen frame for rotatably driving the candle by means of radially displaced pins which engage one end of the candle. By this arrangement, the portion of the surface of the candle engaging the screen print moves at the same rate and in the same direction as the screen print while it is engaged thereby. The candle compositions for improving the ink adhesion of candles comprise the addition of certain additives or combinations thereof with



paraffin. These additives include stearic acid; low molecular weight polyethylene; and copolymers of low molecular weight polyethylene; and copolymers of low molecular weight polyethylene with polyvinyl alcohol, polyvinyl acetate and polystyrene, especially in block polymer form. Furthermore, high molecular weight polymers of limited solubility in wax such as butadiene, isoprene, polypropylene and polystyrene may also be added to the candle composition.

3,771,446

AUTOMATIC OFFSET PRINTING PRESS

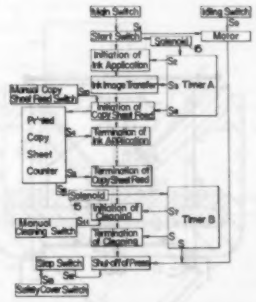
Tamaki Kaneko, and Yoshiharu Iwanaga, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed May 3, 1971, Ser. No. 139,604

Claims priority, application Japan, May 11, 1970, 45/42593; Dec. 29, 1970, 45/128172

Int. Cl. B41f *7/06, 35/06*

U.S. Cl. 101—144 **14 Claims**



In an automatic offset printing press, a preprinting operating, comprising the steps of applying ink to a master plate, transferring an ink image of the master plate to the blanket cylinder and feeding copy sheets between the blanket cylinder and the impression cylinder, is controlled by a first mechanical timer, an intermediate operation, comprising the steps of counting the number of printed copy sheets, terminating the application of ink to the master plate and terminating the feed of copy sheets, is controlled by a printed copy sheet counter, and a post-printing operation, comprising the steps of initiat-

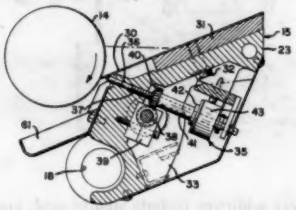
ing and terminating cleaning of the blanket cylinder and shutting off the printing press, is controlled by a second mechanical timer forming a pair with the first mechanical timer.

3,771,447

INK FOUNTAIN CONSTRUCTION

Robert D. Easoz, Woodridge, and Herbert L. Carlson, Chicago, both of Ill., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 31, 1972, Ser. No. 222,098
Int. Cl. B41f *31/04, 31/18, 31/30*
U.S. Cl. 101—365 **1 Claim**



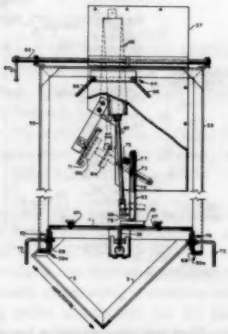
A novel ink fountain for printing presses is provided with a construction which permits an ink blade assembly included in the unit to be readily dropped away from the printing press for clean-up purposes independently of an electric drive motor means that is mounted in a fixed position relative to the printing press main frame and that is selectively connected to the ink blade assembly for effecting blade position adjustments.

3,771,448

APPARATUS FOR PRINTING BAGS

Ely Knox Thomson, and Clyde A. Sailors, Jr., both of Houston, Tex., assignors to Continental Carbon Company, Houston, Tex.

Division of Ser. No. 154,529, June 18, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 314,042
Int. Cl. B41f *17/00*
U.S. Cl. 101—334 **8 Claims**



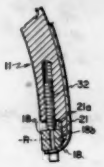
Apparatus, for printing information on a paper bag, featuring a mechanism for raising a printing arm after a bag is printed, pivoting the arm in an arc to another position, and then actuating the arm toward an ink pad so that the printing plate contacts the pad. The cycles of operation are preferably sequentially timed with the operation of a device for stripping one bag at a time from a stack of bags.

3,771,449

ADJUSTABLE PLATE SADDLE WITH GROOVED EDGES

George B. Hill, 3576 Eastcliff Dr., Salt Lake City, Utah

Filed Nov. 24, 1971, Ser. No. 201,724
Int. Cl. B41f *27/12*
U.S. Cl. 101—415.1 **7 Claims**



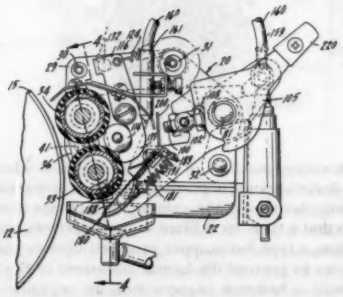
A semi-cylindrical saddle of the type mounted on a printing press roll includes an elongated circular rod, with pegs protruding therefrom, mounted along at least one of the longitudinal edges of the saddle. At least one of the longitudinal edges is cuspate to blend into the circular rod which, in turn, is adjustably positionable toward or away from the saddle along the cusp to tension a printing plate, whose edges are perforated to slip over the pegs, across the saddle.

3,771,450

CLEAN FLUID WASHING SYSTEM FOR DUPLICATING MACHINES AND THE LIKE

John Cleybergh, Chicago, Ill., assignor to A.B. Dick Company, Chicago, Ill.

Continuation of Ser. No. 42,320, June 1, 1970, abandoned. This application June 6, 1972, Ser. No. 260,101
Int. Cl. B41f *35/06*; B41l *41/06*
U.S. Cl. 101—425 **3 Claims**



A system for providing a clean fluid wash of a blanket cylinder surface in a duplicating system for each cleaning which utilizes a cage to carry a relatively movable cradle which has rotatably mounted therein a scrubbing roller and a transferring roller in contact with the blanket cylinder and a metering roller in contact with both of the aforementioned rollers to meter cleaning fluid being used, and a wiper to trap cleaning fluid and remove contaminant from the scrubbing roller during each blanket wash, and selectively operable after the blanket wash is completed to release the contaminated fluid in preparation for the next wash, the setting of all three rollers being adjustable to obtain optimum cleaning results.

ERRATUM

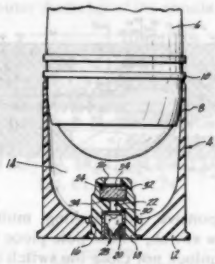
For Class 101—1 see:
Patent No. 3,771,184

3,771,451

LOW PRESSURE BALLISTIC SYSTEM

William B. Woodring, Stony Creek, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Mar. 10, 1972, Ser. No. 233,666
Int. Cl. F42b 9/02
U.S. Cl. 102—38 6 Claims



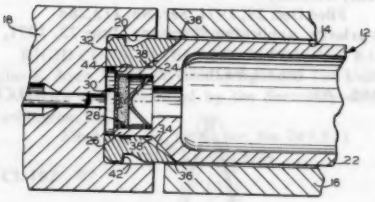
A system for launching a relatively low velocity projectile, which system generates a low pressure propelling gas supply. The propelling gas supply is generated by burning a propellant comprising a small percentage of a primary explosive intimately mixed with a finely divided fuel-oxidizer mixture. The burning rate of the propellant is slower than the detonation rate of the primary explosive, and the propellant sustains burning and generates gas at a rate which is independent of temperature and pressure.

3,771,452

REINFORCING MOVABLE HEAD FOR PROTECTION AGAINST RUPTURED CARTRIDGE CASES

Frederick P. Reed, Davenport, Iowa, and J. Phillip Langdon, Moline, Ill., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 7, 1972, Ser. No. 242,057
Int. Cl. F41f 11/04
U.S. Cl. 102—43 R 4 Claims



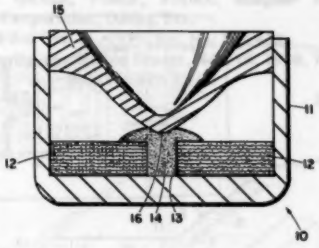
In order to improve the obturation capability of firearm cartridges fabricated from materials other than brass, the usual enlarged extraction rim at the rear end thereof is replaced by a ring fabricated from a more deformable material than the case and provided with a beveled forward portion arranged to be expanded into obturating contact with the interior of the firing chamber in response to the forward movement of the bolt into battery position. The ring also includes an exterior groove engageable with the extractor carried by the bolt and an interior groove into which the firing pressures will swage the material of the cartridge case to provide sufficient locking engagement therebetween to withstand the extraction forces imparted thereto by the extractor during the recoil travel of the bolt.

3,771,453

AMMUNITION PRIMER

Thomas Q. Ciccone, Cornwells Heights, Pa., and Wilmer White, Haddonfield, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 28, 1972, Ser. No. 266,957
Int. Cl. F42c 19/08
U.S. Cl. 102—45 4 Claims



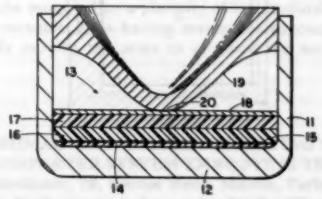
A primer for small and medium caliber ammunition which produces a jet-like flame that extends into the propellant bed of the munition. The primer has a primer pellet seated in a primer cup, the pellet including a plurality of centrally apertured propellant sheets and an igniter button of pyrotechnic mix filling the central apertures, and an anvil secured within the cup and having a conically shaped central portion embedded in the igniter button.

3,771,454

PRIMER

Wilmer White, Haddonfield, N.J., and Thomas Q. Ciccone, Cornwells, Pa., assignors to the United States of America as represented by the Secretary of the Army

Filed Sept. 28, 1972, Ser. No. 293,192
Int. Cl. F42b 19/10
U.S. Cl. 102—45 4 Claims

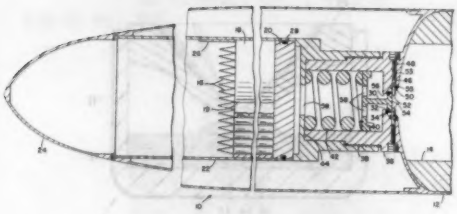


A percussion primer for small caliber ammunition in which the pellet loading can be accomplished by disc punching machines to increase primer production rates. A thin sheet of plastic material is seated in the base portion of the primer cup and has an upper surface coated with an abrasive material, preferably antimony sulfide. A plastic disc of igniter material overlies the abrasive material, and a plastic disc of high energy combustible material overlies the igniter disc. A protective foil overlies the combustible disc, and an anvil is seated in the cup and pressed against the foil.

3,771,455
FLECHETTE WEAPON SYSTEM

Robert T. Haas, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 6, 1972, Ser. No. 260,077
Int. Cl. F42b *15/10*
U.S. Cl. 102—49.4 1 Claim

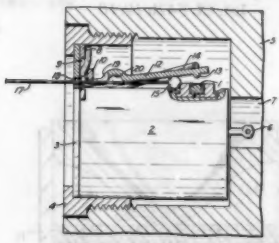


A flechette weapon system which includes a missile operated mechanism for ejecting a plurality of flechettes from a missile. The mechanism includes a valve designed to automatically open at a predetermined pressure in the missile's motor pressure time operation. As the valve opens missile motor pressure passes through the valve and pressurizes an ejection piston and ejects the flechettes supported on the piston.

3,771,456
EXPLOSIVE PRIMER WITH ACTUATING MEANS

Visvaldis Klasons, and George Carroll Bowser, both of Baltimore, Md., assignors to Catalyst Research Corporation, Baltimore, Md.

Filed July 10, 1972, Ser. No. 270,490
Int. Cl. F42b *5/08*; H04m *17/06*
U.S. Cl. 102—70 R 10 Claims

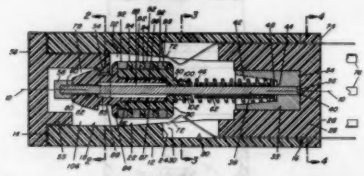


An elongated hammer overlies an explosive primer and a supporting member that extends laterally away from the primer, the end of the hammer remote from the primer being pivotally supported so that its opposite end can swing away from the primer against the resistance of a spring. The hammer and adjacent surface of the supporting member diverge toward the primer, and a spacer near the primer is disposed between the hammer and the supporting member where it normally spaces the hammer from that member. The spacer can be pulled toward the pivoted end of the hammer to swing the hammer away from the primer until the spacer enters an opening in the hammer, which permits the free end of the hammer to swing back and strike the primer.

3,771,457
MULTI-CIRCUIT SAFING AND ARMING SWITCH

Ralph Buxton, Arnold, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 13, 1972, Ser. No. 305,779
Int. Cl. F42c *15/40*, *11/00*
U.S. Cl. 102—70.2 R 5 Claims



An inertia responsive, non-latching, multi-pole, normally open, single throw switch, whose pole piece while in a "safe" position will not unlock nor close the switch contacts until the switch has experienced the three sequentially applied environmental accelerations, such as found in a projectile when it has been launched from a weapon. The present device comprises an inner end cap pole locking means, a hollow cylindrical insulator axially aligned with the locking means and proximately fixed thereto, a terminal support means affixed to the other end of the cylindrical insulator, a plurality of lead spring contacts peripherally disposed within the support means and exiting therefrom as electric switch contact leads, a flexible axially positioned cantilever operatively positioned in the support means, a biasing means for holding a slidable interlocking pole means on the cantilever and maintaining the switch in an open safe position until two of the three sequential accelerations found in a gun barrel cause the pole means mass to bend the cantilever away from the locking means, releasing the pole means therefrom, thereby permitting the centrifugal force of spin to overcome the biasing means and sliding the pole means toward the switch contacts and closing the switch so that the projectile is armed.

3,771,458
SABOT PROJECTILE

Otto Schweimler, Freiburg; Axel Kiehn, and Bernd Sauter, both of Schramberg-Sulgen, all of Germany, assignors to Industrie-Werke Karlsruke Augsburg Aktiengesellschaft, Karlsruke, Germany

Filed Dec. 29, 1971, Ser. No. 213,284
Claims priority, application Germany, June 23, 1971, P 21 31 084.9
Int. Cl. F42b *13/16*, *11/14*
U.S. Cl. 102—93 3 Claims

An undercalibrated projectile has its core covered by a cap of plastic extending with a cylindrical portion into a sabot

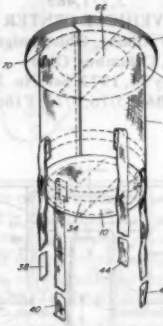
which is connected by an automatically releasable coupling with the rear end of the core of the projectile. The coupling comprises an annular helical spring placed around a core formed by a spring ring and this spring combination engages lockingly an annular groove on the rear end of the core of the projectile and also engages tensionally an annular groove in the inner wall of the sabot; the last named annular groove having a cross section which is much larger than the cross section of the annular helical spring and an inner diameter which is greater than the outer diameter of the annular helical spring.

3,771,459

COMPARTMENTED BAG FOR AUTOMATIC LOADING

Burton Lohnstein, Dover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 14, 1972, Ser. No. 271,956
Int. Cl. F42b *9/24*
U.S. Cl. 102—97 **6 Claims**



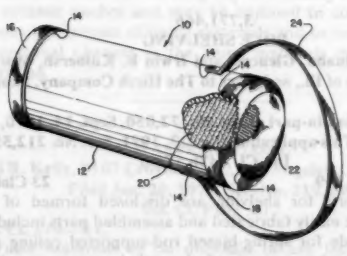
A multi-compartmented bag for holding a projectile propellant charge therein. The bag comprises a main charge tubular section having a plurality of straps sewn to its outer peripheral surface, a first integral funnel bag means for holding therein an igniter charge, a second integral funnel bag means for holding therein a flash reducer charge, wherein the tubular section is sewn intermediate to the first and second bag means and whereby sequence of assembly the first and second bag means can readily be filled with an igniter and flash reducer charge respectively by automatic loading equipment.

3,771,460

RIGID CONSUMABLE FOAM POWDER BAG

Douglas E. Ayer, La Plata, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 26, 1972, Ser. No. 247,541
Int. Cl. F42b *9/24*
U.S. Cl. 102—97 **6 Claims**



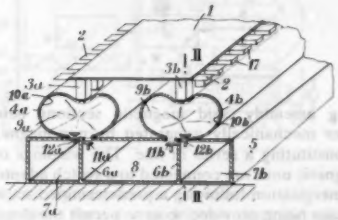
A powder bag for gun propellant charges in the form of a hollow cylindrical casing and made from high density polyurethane foam. The cylinder is filled with propellant and closed at both ends by consumable cloth caps, one cap having a standard ignition pad attached externally thereto. A cloth handling strap may be attached to the second cap and gun bore erosion reduction additives may be impregnated in the foam casing.

3,771,461

MOVING TRACK FOR A TRANSPORTATION INSTALLATION HAVING INDEPENDENT VEHICLES

Francois L. Giraud, Plaisir, France, assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Oct. 26, 1971, Ser. No. 192,432
Claims priority, application France, Nov. 16, 1970, 7040974
Int. Cl. E01b *26/00*
U.S. Cl. 104—123 **5 Claims**



A moving track for a transportation installation for moving vehicles therealong, the track having a flexible support member which is movable vertically throughout substantially all its length and means for imparting, in the support member, a transverse vertical wave that moves in the desired direction of movement of the vehicle supported thereby. Each vehicle is supported on a forwardly and downwardly extending portion of the support member defining the front flank of a wave during acceleration or constant forward movement of the vehicle along the track and is supported by a portion of the support member defining the rear flank of a wave during the deceleration of movement of the vehicle along the track. Successive portions of the track are movable vertically and sequentially by pneumatic or electromagnetic means to produce the wave. In some forms of the track, the flexible track is supported by flexible tubes having cavities or chambers arranged longitudinally in the tubes and having means for successively and sequentially providing fluid under pressure to the chambers and for exhausting fluid therefrom to produce the waves in the track. In other forms, the track is in the form of a flexible cable or tube mounted on a plurality of longitudinally spaced, vertically movable arms having means for successively and sequentially moving the arms to produce the waves in the track.

3,771,462

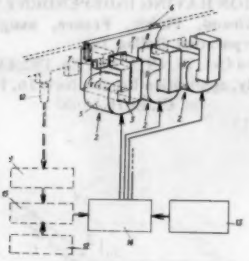
ELECTROMAGNETIC MOTION IMPARTING MEANS AND TRANSPORTER SYSTEM EMBODYING THE SAME

Maurice Barthalon, 78, avenue Henri Martin, Paris; Auguste Moiroux, Ecole Centrale Lyonnaise, Ecully, Rhone, both of France, and Patrick Watson, Park Farm House, Farm Ln., Ashtead, Surrey, England

Division of Ser. No. 32,774, April 28, 1970, Pat. No. 3,707,924. This application May 24, 1972, Ser. No. 256,612
Int. Cl. B60l *13/00*; **H02k** *41/02*
U.S. Cl. 104—148 LM **29 Claims**

An electromagnetic device producing a mechanical action, as in a transporter system comprising a suspended car, or in an electric motor, includes a magnetizing assembly and a magnetized assembly adapted to move one with respect to the other. The magnetizing assembly comprises at least one magnetic circuit defining an air gap and provided with at least one inductor wiring, the magnetized assembly, subjected to the ac-

tion of the magnetizing assembly comprising at least one magnetic portion associated with at least one non-magnetic portion and being in part housed in the air gap of said magnetizing assembly. This latter comprises at least two electromagnetic units each comprising an air gap and disposed in line whereas said magnetized assembly comprises a number of separate magnetic sections at least equal to two, the pitch of which is different from that of the electromagnetic units of said mag-



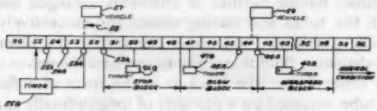
netizing assembly, said magnetic sections being coupled together mechanically, separated by non-magnetic sections and constituting a series in line. The windings of said electromagnetic units are connected to a switch adapted to ensure their energization following a predetermined sequence, guiding means being provided so as to permit the displacement of the magnetic sections of said magnetized assembly in the air gaps of said electromagnetic units in a transverse direction relative to the lines of force in said air gap.

3,771,463

CONTROL SYSTEMS FOR VEHICLES OPERATING ON A TRACK

Charles H. Smoot, Wayzata, and Lowell A. Kleven, Bloomington, both of Minn., assignors to Uniflo Systems Company, Edina, Minn.

Filed Nov. 30, 1971, Ser. No. 203,256
Int. Cl. B60v *3/04*
U.S. Cl. 104—155 **20 Claims**



A vehicle transportation system operating along a guideway including a control system for regulating the speed and spacing between vehicles operated in the same guideway and utilizing guideway mounted sensors for detecting the presence of a vehicle, in combination with timers regulating the speed of the detected vehicle in relation to a nominal selected speed, and also regulating the spacing of the trailing vehicles in relation to the lead vehicle by regulating the speed of the trailing vehicle. The sensors can be used for controlling the merging of a starting vehicle into a main line at the proper position and also for insuring proper separation at intersecting tracks.

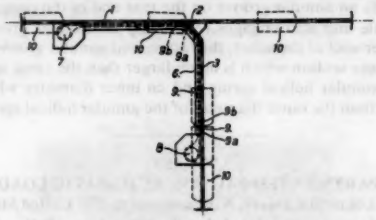
3,771,464

TOW TRUCK SYSTEM

Hans Joachim Reiche, Hummelweg, Germany, assignor to Fromme, Foerderanlagen GmbH, Wetzler, Germany

Filed Oct. 5, 1971, Ser. No. 186,636
Int. Cl. B65g *17/20, 17/38*
U.S. Cl. 104—172 BT **11 Claims**

The intersection between the main track along which vehicles are pushed and a non-powered spur track is controlled by a switch device. An endless drive associated partially with the main track and the spur track causes vehicles to move along



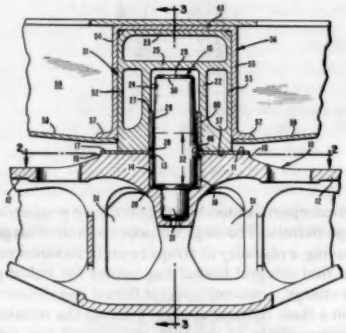
the spur track by contacting a portion of the vehicle as it is moving along the main track.

3,771,465

RAILWAY VEHICLE CENTER BEARING

Harry D. Glenn, New Albany, Ohio, assignor to Buckeye Steel Castings Company, Columbus, Ohio

Filed May 24, 1972, Ser. No. 256,405
Int. Cl. B61f *5/16, 5/18;* **F16c** *17/04*
U.S. Cl. 105—199 C **5 Claims**



A railway vehicle has a swivel connection between its body bolster and truck bolster which combines a substantially flat bearing surface on the bottom of a center brace, a rimless substantially flat bearing surface on the truck bolster and under the bearing surface of the center brace, a wear resistant disk between the flat surfaces, and a king-pin in a pocket lined with wear resistant bushings. The upstanding rim of the conventional truck center plate and the conventional body center plate projecting downwardly from the center brace are eliminated. A partially tapered king-pin sufficiently strong to prevent substantial relative lateral and longitudinal movement between the bolsters is provided.

3,771,466

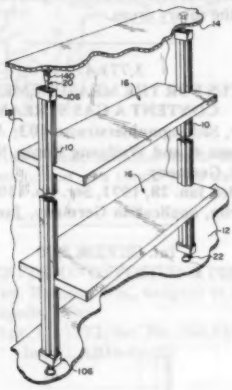
POLE SHELVING

Irwin J. Ferdinand, Glencoe, and Irwin R. Kulbersh, Morton Grove, both of Ill., assignors to The Hirsh Company, Skokie, Ill.

Continuation-in-part of Ser. No. 72,050, Sept. 14, 1970, abandoned. This application Dec. 27, 1971, Ser. No. 212,551
Int. Cl. A47b *57/06*
U.S. Cl. 108—109 **23 Claims**

Pole supports for shelving are disclosed formed of interchangeable easily fabricated and assembled parts including a tubular guide for spring-biased rod-supported ceiling and floor shoe members, a pair of channeled support members having recessed concealed web walls with spaced slots to engage cantilever shelf brackets and having opposed offset wall

portions for receiption of the lugs and cleats of top and bottom trim cap members that hold the assembly together. An easily inserted cleat interlocks the web walls of the support members and provides a seat for the spring-biased ceiling shoe. The cap members have a fulcrum recess to receive a latch member that frictionally engages the rod of the ceiling shoe member to lock



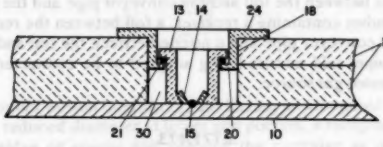
same. Shelf brackets of two types are used which engage the slots of the web wall in cantilever relationship and are adapted to support either steel reinforced wooden shelves or steel shelves having either down-turned end flanges and rolled box-shaped side flanges, or are adapted for use with a snap-on molded end flange. Other embodiments are disclosed.

3,771,467

ADJUSTABLE ANCHOR DEVICE FOR FURNACE WALLS

Larrie H. Sweet, Ransomville, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Aug. 30, 1972, Ser. No. 285,390
Int. Cl. F23m *5/00*
U.S. Cl. 110—1 A **7 Claims**



An improved anchor device for securing refractory linings to furnace walls, the device comprising a ceramic holding cap enclosing an upper extension of a ceramic anchor attached to the furnace wall. The holding cap is slideably movable upon the ceramic anchor and may be adjusted to compensate for various thicknesses of lining materials and to compensate for dimensional changes in the lining materials during furnace operation.

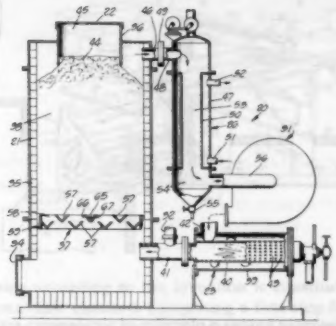
3,771,468

WASTE DISPOSAL

Paul R. Kelly, 8107 Croyden Ave., Los Angeles, Calif.

Filed Jan. 20, 1972, Ser. No. 219,289
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 C **18 Claims**

Waste materials to be disposed of are fed into a feed hopper, the outlet of which is directed into a rotary vane feeder to automatically control the feed rate and act as an air-lock. Shredded waste material is stacked in a pyrolyzing chamber or column through which hot gases, initially containing no oxygen pass upwardly, driving off volatile material. A condenser reclaims the condensable materials, and the non-condensable gases are recirculated through the combustor and pyrolyzing chamber carbonizing the pyrolyzed waste in the lower reaches of the chamber. After pyrolyzing is completed in the lower portions of the waste material, excess air is admitted into the recirculating hot gas stream. Contact of the oxygen in the excess air with the carbonized material



causes substantially immediate combustion. Ash from the combustion zone is then dumped into a discharge chute, or, optionally, removed by traveling scraper bars.

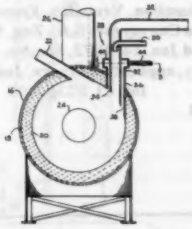
Loading of waste into the described disposal system may be on a batch basis, or, alternatively, by a conveyor as a continuous process, and, in the latter case, a steady state operation is achieved where destructive distillation occurs, in the central regions, while distillation is substantially complete and carbonizing and combustion takes place at the lowermost levels.

3,771,469

INCINERATOR

Syed Aejaz Ali, Shelbyville, and Robert Loren Shields, Rushville, both of Ind., assignors to General Electric Company, New York, N.Y.

Filed Aug. 9, 1972, Ser. No. 279,197
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 R **15 Claims**



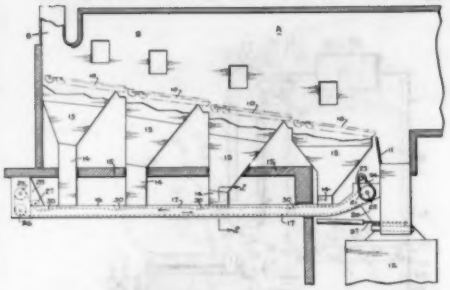
An incinerator for burning waste material including a horizontally extending combustion chamber having spaced end walls and a side wall through which a mixture of waste material and air is fed under pressure tangentially directed to said side wall for establishing a vortical movement of the waste material towards one of the end walls. The chamber includes an exhaust flue near one end wall substantially concentric with the longitudinal axis of the chamber to exhaust combustion gases. The waste material is ignited during its vortical movement through the combustion chamber by a combustion burner having a nozzle directed into the combustion chamber and which is provided with an enclosure annularly spaced thereabout forming a surrounding space for the passage of cooling gas in a swirling path over the surface of the burner nozzle.

3,771,470

INCINERATOR STOKER SIFTINGS CONVEYOR MECHANISM

Robert K. Hampton, 119 Somerset Ave., Garden City, N.Y.

Filed July 31, 1972, Ser. No. 276,859
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **8 Claims**



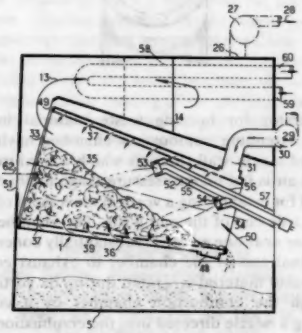
An incinerator having a plurality of air plenums respectively disposed beneath successive sections of a stoker grate system, each plenum being hermetically sealed off from one another for independent delivery of air for combustion under any desired positive pressure for burning trash deposited on the grate system. The plenums serve also as hoppers through which the grate siftings are discharged into an underlying conduit filled with water within which is accommodated an endless drag chain conveyor mechanism having a lower run of flights which moves along the bottom of the conduit for transfer of the siftings deposited therein to a discharge station and an upper run of flights which move in an undulating path in the region of the water surface to skim off from the water surface floating particles of the burnt material and force them to be submerged in the water for gravity fall thereof to the bottom run of the conveyor mechanism.

3,771,471

MOBILE INCINERATOR WITH A ROTARY FURNACE, PARTICULARLY FOR HOUSEHOLD REFUSE

Michel G. Du Chambon, Versailles, France, assignor to Cigeco Compagnie des Convoyeurs S.A., Zug, Switzerland

Filed Jan. 14, 1972, Ser. No. 217,851
Claims priority, application France, Jan. 18, 1971, 7101430
Int. Cl. F23g *5/06*
U.S. Cl. 110—14 **8 Claims**



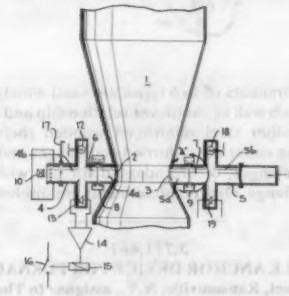
A mobile incinerator having a rotary furnace, particularly for household refuse, mounted on the chassis of a motor vehicle. The rotary furnace is in the form of a double-walled drum which is open at both ends. The interior wall of the drum is formed by a grating comprising a plurality of thin perforated metal plates having a plurality of flow openings therethrough. The exterior wall of the drum is spaced from the grating and forms with the grating a flow chamber for a combustible gas. The flow openings in the grating introduce the combustible gas, namely fresh air, into the combustion zone defined within the interior of the rotary drum.

3,771,472

APPARATUS FOR THE MEASUREMENT OF DUST CONTENT A GAS STREAM

Alfred Stonner, Sickingmuhlerstrasse 103; August Schneider, Oppauerstrasse 4, and Wolfgang Konig, Schkopauerstrasse 8, all of Marl, Germany

Filed Jan. 28, 1971, Ser. No. 110,580
Claims priority, application Germany, Jan. 28, 1970, P 20 03 597.6
Int. Cl. F23k *3/00*
U.S. Cl. 110—101 R **7 Claims**



Aparatus for measuring and/or regulating the dust content of a gas stream comprising a conveyor pipe through which the gas stream is arranged to pass and a pair of tubes extending from the walls of the conveyor pipe and being substantially diametrically opposed, one of the tubes containing a radiation emitter, a foil between the emitter and the conveyor pipe and a nozzle between the foil and the conveyor pipe and the other of the tubes containing a receiver, a foil between the receiver and the conveyor pipe and a nozzle between the foil and conveyor pipe, said nozzles being adapted to be connected to a compressed gas source.

3,771,473

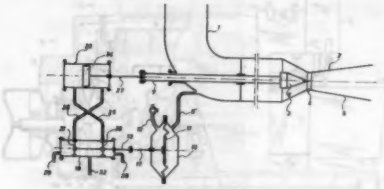
TUYERE FOR A BLAST FURNACE AND A METHOD FOR OPERATING THE TUYERE TO ATOMIZE COMBUSTIBLE MATERIAL FED INTO THE TUYERE BY A SHOCK WAVE

Daniel Borgnat, Senecourt; Henri Della Casa, and Noel Jusseau, both of Metz, all of France, assignors to Institut De Recherches De La Siderurgie Francaise, Saint Germain-en-Laye, France

Filed Jan. 19, 1972, Ser. No. 218,962
Claims priority, application France, Jan. 20, 1971, 7101742
Int. Cl. F23i *5/00*
U.S. Cl. 110—182.5 **5 Claims**

A method and an arrangement for operating a supersonic tuyere having a convergent and a divergent passage portion separated by a neck in such a manner so as to produce in the divergent passage portion a shock wave to atomize a combustible material fed in the region of the neck into the tuyere. The shock wave is produced by more or less restricting the open cross section of the neck, preferably by adjusting the axial position of a solid body in the convergent portion of the tuyere with respect to the neck, to maintain the pressure of a

combustion sustaining material fed into the tuyere upstream of the convergene portion, during variation of the fed amount



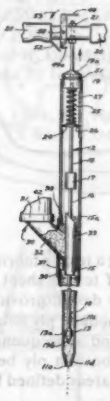
of such material within predetermined limits, at such a magnitude to assure production of a shock wave at the divergent portion.

3,771,474

GOPHER POISON DEPOSITING TOOL

Rue Raymond Elston, Hudson, Wis., assignor to Rue R. Elston Co., Inc., Minneapolis, Minn.

Filed Apr. 17, 1972, Ser. No. 244,669
Int. Cl. A01n *23/00*
U.S. Cl. 111—96 **9 Claims**



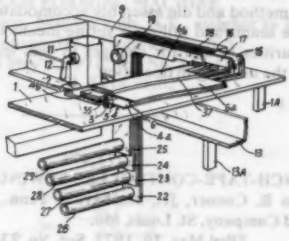
A gopher poison depositing tool having an elongated barrel with a reduced diameter at lower end portion, a receptacle for a cartridge of poison and opening the cartridge as it is inserted, a combination receptacle mounting and poison metering member mounted on the barrel to mount the cartridge exterior of the barrel and extend within the barrel, a plunger extending within the barrel, said plunger having an intermediate portion cooperating with the metering part of said combination member for dispensing a metered dose of poison upon retracting the plunger from a datum position to a retracted position whereby the metered dose falls to the lower end portion of the barrel, a lower plug that cooperates with the lower end portion of the barrel to block the discharge of poison therethrough when the plunger is in the datum position and permit the discharge of poison upon the plunger being retracted, and a handle portion exterior of the barrel, a guide member mounted on the upper end portion of the barrel for mounting the plunger on the barrel for reciprocal movement between its positions, a spring member acting against the plunger and the guide member for resiliently urging the plunger to its datum position, and a lock member on the handle for releasably retaining the plunger in its datum position.

3,771,475

DEVICE FOR ALIGNING AND MAINTAINING SUPERPOSED PIECES OF FLEXIBLE SHEET MATERIAL

Jean Guichard, Yerres, Essonne, France, assignor to Centre D'Etudes Techniques Des Industries De L'Habillement, Paris, France

Filed Jan. 14, 1971, Ser. No. 106,456
Claims priority, application France, Jan. 30, 1970, 7003279
Int. Cl. D05c *9/04*
U.S. Cl. 112—121.15 **5 Claims**



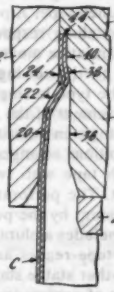
The device according to the invention is constituted by a plate and movable elements comprising a first stop for alignment of a first piece of material and at least one assembly fixture comprising a separating blade and an additional stop for aligning another piece of material, all of said movable elements being mounted and arranged in order to be capable of assuming selectively either a rest position which is distant from the plate or a work position when said elements have been superposed successively on said plate.

3,771,476

METHOD AND APPARATUS FOR NECKING-IN TUBULAR MEMBERS

Carl William Heinle, 416 Old Short Hills Rd., Short Hills, N.J.

Filed Mar. 2, 1972, Ser. No. 231,207
Int. Cl. B21d *51/26*
U.S. Cl. 113—120 R **13 Claims**



Method and die assembly for necking-in tubular members wherein the die assembly comprises an outer reducing die and an inner die pilot comprised of a T-shaped holder on which is mounted a pilot ring that floats radially on an also mounted spring biased axially floating retaining ring means. The reducing die has a recessed inwardly-angled directing surface on the wall of its inner chamber, and the pilot ring has a wide diameter circumferential step surface and two supporting surfaces of lesser diameter. A clearance is provided between the pilot ring supporting surfaces and the outer reducing die. The outer reducing die is brought into telescoping engagement with the marginal edge portion of the wall of a tubular member. This causes the reducing die directing surface to direct the marginal edge portion inwardly against the pilot ring step whereby

the edge portion is directed into a groove formed by the pilot ring, the outer reducing die and a control surface which transversely engages the edge of the wall and controls its axial movement in relation to the die assembly. In the groove, the marginal edge portion is formed into a rim of reduced diameter. As the outer reducing die continues to move axially over the tubular wall, the directing surface directs the flow of tubular wall material into the aforementioned clearance and toward the lesser diameter pilot ring surfaces against and along which it rests to form a neck having a diameter less than that of the rim.

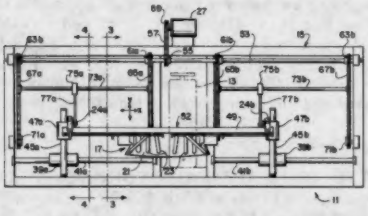
The method and die assembly accomodates can bodies having side seams and utilizes a spring means to compensate for irregularities in and for changes in wall length which occur during the necking-in operation.

3,771,477

PUNCH-TAPE-CONTROLLED SEWING APPARATUS

William R. Conner, Jr., Shelbyville, Tenn., assignor to Kellwood Company, St. Louis, Mo.

Filed Mar. 16, 1972, Ser. No. 235,253
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.12 **6 Claims**



Apparatus for automatically controlling movement of material for sewing by a sewing machine in response to a pattern determined by a punch tape. A positioning device whose movement is controlled along respective axes by a pair of stepping motors effects relative movement of the material to be sewed with respect to the sewing machine. Each of the stepping motors is of the type having a plurality of windings producing stepwise movement of the motor shaft when energized with alternate changes in polarity. A punch-tape reader detects uncoded perforations arranged in staggered sequence in channels of a punch tape with two channels controlling each axis of movement. The perforations define a predetermined pattern of movement by the positioning device. Solid-state control circuitry includes a plurality of flip-flops each interconnected with the tape reader and each switching from one stable state to its other stable state in response to detection by the tape reader of corresponding perforations in the tape to cause energization by the control circuitry of the windings with successive alternate changes in polarity. The arrangement provides automatic sewing of the material at high speed according to the predetermined pattern.

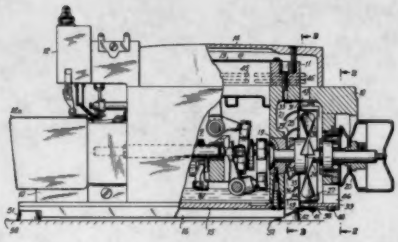
3,771,478

SEWING MACHINE COOLING SYSTEM

Michael N. Tranquilla, Elmhurst, and Gerald A. Kraatz, Highland Park, both of Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed June 28, 1972, Ser. No. 267,134
Int. Cl. D05b *71/00*
U.S. Cl. 112—218 R **15 Claims**

A sewing machine is provided with a ducted fan mounted on the machine drive shaft. The fan provides a substantially axial flow. Air discharged from the fan is directed over the bottom cover plate of the sewing machine which is provided with heat



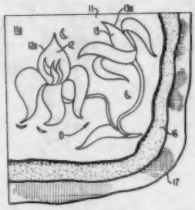
dissipating fins. Additionally, air discharged from the fan is directed over the top of the machine.

3,771,479

METHOD OF MAKING A TEXTILE FABRIC

Mary Ann E. Mavis, 2870 Woffard Rd., Charleston, S.C.

Substitute of abandoned Ser. No. 52,645, July 6, 1970.
Filed Apr. 12, 1972, Ser. No. 243,452
Int. Cl. D05b *3/00*
U.S. Cl. 112—266 **4 Claims**



A method of making a textile fabric which includes stitching together three plies of textile sheet material along the marginal edges of a textile design provided on the surface of the top ply with the intermediate ply being formed of bulky filling material or padding and subsequently removing portions of the intermediate and bottom ply between the stitched marginal edges so that the areas defined by the stitched design are formed in relief.

ERRATUM

For Class 113—120 R see:
Patent No. 3,771,476

3,771,480

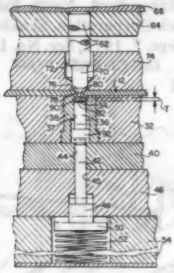
METHOD AND APPARATUS FOR EXTRUDING A RIVET FORM IN A LAYER OF METALLIC MATERIAL

Verner A. Johnson, Livonia, Mich., assignor to Johnson Die & Engineering Co., Detroit, Mich.

Filed Oct. 27, 1971, Ser. No. 193,079
Int. Cl. B21d *39/00, 51/00*
U.S. Cl. 113—1 R **14 Claims**

An assembly of two layers of metallic, or a metallic and a non-metallic, material conjoined by an extruded elongated rivet formed in and from one metallic layer, staked over and about the perimeter of an opening in the second layer, is disclosed. The extruded elongated rivet may be solid or tubular and extends beyond the plane of the one layer a distance up to

about 25 percent greater than the thickness of the layer from which it is formed, providing substantial rivet length to secure



the second layer to the first layer. The inventive process and tooling for forming the extruded elongated rivet is also disclosed.

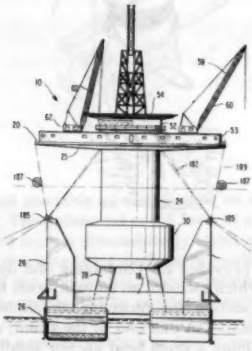
ERRATUM

For Class 113—55 see:
Patent No. 3,771,482

3,771,481
SINGLE COLUMN SEMISUBMERSIBLE DRILLING VESSEL

Yoram Goren, and Samuel H. Lloyd, III, both of Los Angeles, Calif., assignors to Santa Fe International Corporation, Los Angeles, Calif.

Filed May 3, 1971, Ser. No. 139,765
Int. Cl. B63b *35/44*
U.S. Cl. 114—.5 D **25 Claims**

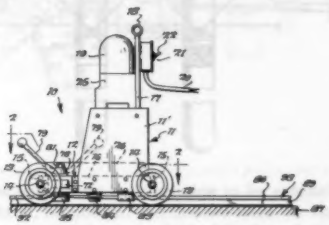


The vessel comprises a pair of laterally spaced elongated hulls having a plurality of upstanding columns spaced along outboard portions of the hulls. In the preferred form, a central column supports a working platform in spaced relation above the hulls. The hulls buoyantly support the vessel in a low draft condition with the hulls having freeboard. The hulls and outboard columns have ballast compartments for ballasting and deballasting the vessel to respectively submerge the hulls, outboard columns, and a portion of the central column to provide a high draft condition with the mean waterline located intermediate the height of the central column and between the platform and the upper ends of the outboard columns, and return the vessel to a low draft condition. The outboard columns provide stability to the vessel during the initial portion of its transition from the low draft condition to the high draft condition and in the final portion of its transition from the high to the low draft condition. Stability in the high draft condition is predominantly provided by locating the center of gravity below the center of buoyancy. Drilling operations in the high draft condition are effected through the central column which also provides decks for mud handling, storage, etc.

3,771,482
SEAM FORMING MACHINE

Danny W. Thompson, Niagara Falls, N.Y., assignor to Thompson Roofing Company, Inc., Niagara Falls, N.Y.

Filed May 5, 1971, Ser. No. 140,415
Int. Cl. B21d *39/02*
U.S. Cl. 113—55 **4 Claims**

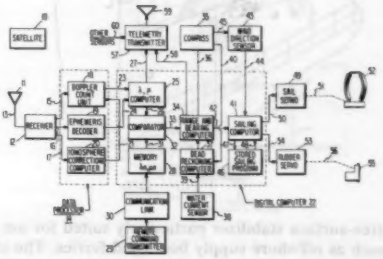


A machine for forming a double-fold, standing seam between the upstanding, abutting edges of adjacent sheets of metal roofing material. The machine comprises a plurality of rotatable forming rolls and a corresponding number of rotatable counter rolls engageable with the work for progressively forming the desired double-fold, standing seam in the sheets as the machine advances therealong. The forming rolls are mounted on slide blocks biased toward the counter rolls and the leading forming roll is manually displaceable toward and away from its associated counter roll to enable these latter rolls to initially straddle the work.

3,771,483
APPARATUS AND METHOD FOR THE AUTOMATIC NAVIGATION OF A SAILING VESSEL

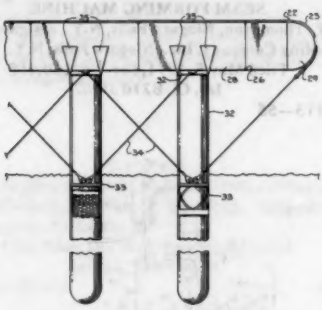
Donald Spencer Bond, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 886,300, Dec. 18, 1969, Pat. No. 3,691,978. This application Oct. 29, 1971, Ser. No. 193,755
Int. Cl. B63h *25/04*
U.S. Cl. 114—39 **1 Claim**



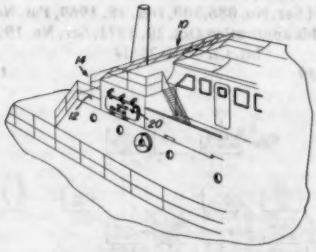
A navigation system for a sailing vessel which automatically sails the vessel from its present location to a destination location. The system responds to the prevailing wind conditions and characteristics of the craft to either sail directly or tack to the desired destination. Upon arrival at the destination location the system navigates the vessel to cause the vessel to keep a station in the immediate vicinity of the destination location.

3,771,484
INFLATABLE FLOATING ISLAND
Eugene A. Schott, Akron, and Donald B. Tschudy, Canton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 14, 1972, Ser. No. 243,993
Int. Cl. B63b *35/50*
U.S. Cl. 114—43.5 **4 Claims**



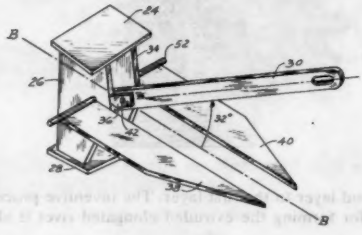
An inflatable floating island suitable for use as a landing field for aircraft having a plurality of inflatable bags serving as floor beams and a plurality of panels positioned on top of said bags to serve as a landing surface. Adjacent panels are keyed together to have the panels work as one large panel. The inflatable bags are supported by long cylindrical flotation bags that are partially filled with water to provide a stable platform.

3,771,485
QUICK-DUMP FREE-SURFACE STABILIZER
Paul A. Brunsell, Massapequa, Long Island, N.Y., assignor to Flume Stabilization Systems, Inc., Hoboken, N.J.
Filed Jan. 19, 1972, Ser. No. 218,915
Int. Cl. B63b *43/06*
U.S. Cl. 114—125 **15 Claims**



A free-surface stabilizer particularly suited for use on vessels such as off-shore supply boats and ferries. The stabilizer takes the form of a liquid-tight rectangular tank extending across the beam of the associated vessel. The port and starboard walls of the tank are provided with hinged liquid-tight doors pneumatically controlled at a remote location. Upon activation of a pneumatic system, the port and starboard doors of the tank are opened and the stabilizing liquid spills from the tank and into the sea in a matter of seconds. In this manner, the free-surface moment is quickly eliminated, and the GM of the vessel is quickly increased.

3,771,486
TWIN FLUKE ANCHOR HAVING IMPROVED SHANK-CROWN CONTACT
Daniel Comstock Hungerford, North Palm Beach, Fla., assignor to Brunswick Corporation, Skokie, Ill.
Filed Sept. 7, 1971, Ser. No. 178,232
Int. Cl. B63b *21/44*
U.S. Cl. 114—208 R **6 Claims**



A twin fluke anchor in which the shank is limited in angular displacement by engagement with the leading edge of the crown side wall, thus allowing increased crown-shank engagement forces.

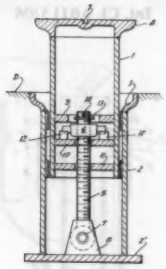
3,771,487
ANCHOR HANDLING DEVICE
Roger V. McGee, Jr., 6011 Gaston, Apt. 216, Dallas, Tex.
Filed Jan. 20, 1972, Ser. No. 219,491
Int. Cl. B63b *21/22*
U.S. Cl. 114—210 **13 Claims**

A device is provided for containing and dispensing small boat anchors which includes an annular drum having an outer recessed reel section for receiving an anchor line wound thereupon, a handle at one end of the drum, and a latch for releasably retaining a small boat anchor axially of the drum. The device is operated by grasping the handle with one hand and holding the device out over the water and then releasing the latch to allow the anchor to fall from the drum and the anchor line to pay out from the recessed reel section.

3,771,488
BOLLARD
Gunter Ecke, Bremerhaven, Germany, assignor to Aktiengesellschaft "Weser," Bremen, Germany
Filed Mar. 10, 1972, Ser. No. 233,424
Claims priority, application Germany, Mar. 26, 1971, G 71 11 558.7
Int. Cl. B63b *21/06*
U.S. Cl. 114—218 **7 Claims**

A bollard in which the bollard post to which a rope is to be attached is mounted in a preferably tubular upright guide

member so as to be movable in vertical direction relative to the guide member between an extended position projecting beyond the guide member and a collapsed position completely



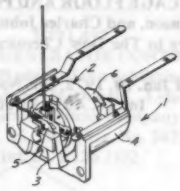
withdrawn into the latter, whereby, when the guide member is mounted in a recess of a pier or ship, the bollard post may be withdrawn into the guide member when not in use so as to be out of way.

3,771,489

MOVING METER ELEMENT AND POINTER

David B. Pearson, Raritan, N.J., assignor to Weston Instruments, Inc., Newark, N.J.

Filed Aug. 20, 1971, Ser. No. 173,527
Int. Cl. G01d *13/22*
U.S. Cl. 116—136.5 **11 Claims**



A moving coil assembly of a meter has an integral pointer mounting staff. The pointer takes the form of a thin wall tubular body formed from a dimensionally stable plastic material with memory characteristics such as polysulfone. A second embodiment of the pointer has its end flattened to present a thin knife blade profile. Either pointer is readily mounted on the staff of the moving assembly merely by pushing the pointer over the staff to a seated position as determined by stop edges adjacent the base of the staff. Because of its memory characteristics the pointer will straighten itself even though it is impacted against a stop with sufficient force to initially bend the pointer.

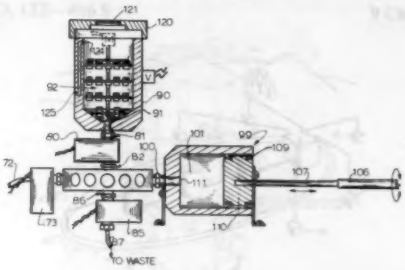
3,771,490

AUTOMATIC TISSUE PROCESSOR

Thomas D. Kinney, 3120 Devon Rd., and John E. P. Pickett, 3323 Pinafore Dr., both of Durham, N.C.

Filed Feb. 22, 1972, Ser. No. 228,115
Int. Cl. B05c *11/10*
U.S. Cl. 118—7 **18 Claims**

A tissue processor is programmed for fixation, dehydration and clearing of electron microscopy size particles and utilizes a porous receptacle for each particle or group of particles of tissue and a processing chamber adapted to contain a plurality of the receptacles. The chamber is connected to a plurality of containers, some of which are refrigerated, and which contain the various processing solutions. The solutions are individually piped to, and from beneath, the chamber through a remotely controlled valve and manifold arrangement which also connects with a metering pump. This arrangement minimizes fluid



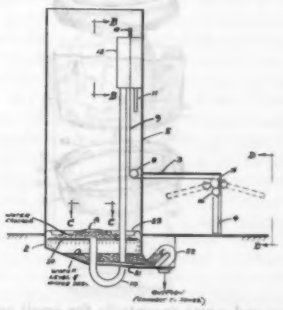
contamination and allows each solution to be precisely metered, brought to, retained in and drained from the chamber thus allowing the particles to be bathed in the solutions according to an automatic programmed time sequence. The program may be varied as to number of cycles per solution, as to number of solutions per program, as to time per cycle and as to starting and terminal solutions in the program.

3,771,491

CANINE JOHNNY

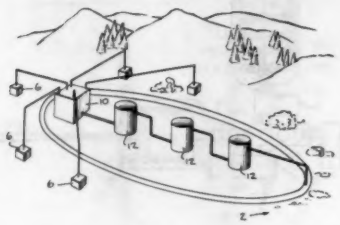
Australia Hunter, 1540 E. Ocean Front, Balboa, Calif.

Filed Sept. 28, 1971, Ser. No. 184,481
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **4 Claims**



Canine Johnny, for the use of dogs, permanently installed in a domicile, or back yard, said Canine Johnny being provided with automatic flushing means for the disposition of residue, where in dogs may relieve themselves of organic wastes at will without human supervision or assistance, after the dog has been trained to use the Canine Johnny, and thus avoid befouling public or private environs.

3,771,492
WATER CIRCULATION SYSTEM FOR FRESH WATER FISH HUSBANDRY
William A. Doherty, Knoxville, Tenn., assignor to Marine Protein Corporation, New York, N.Y.
Filed Mar. 30, 1970, Ser. No. 23,625
Int. Cl. A01k *61/00*
U.S. Cl. 119—3 8 Claims

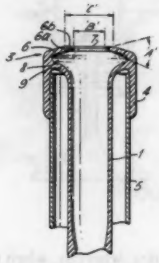


This invention relates in general to a system and method for handling the large quantities of water required in the raising of fresh water fish in an artificial environment and more particularly to a technique for economically handling and treating the water so that it can be reused.

3,771,493
LITTER AND WASTE RECEPTACLE FOR SMALL PET ANIMALS
Keith F. Chandor, Lee's Hill Rd., Basking Ridge, N.J.
Filed May 30, 1972, Ser. No. 258,131
Int. Cl. A47k *11/02*
U.S. Cl. 119—1 4 Claims

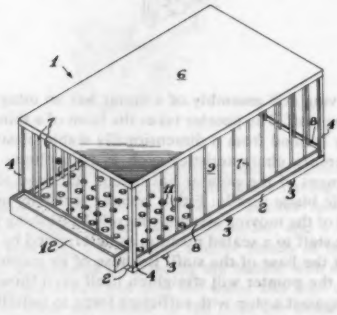
A litter and waste receptacle for small pet animals such as cats, comprising a basin, a liner in the basin having the configuration, and performing the function, of a removable, disposable and replaceable receptacle for litter and waste, and a cover removably mounted on the basin and detachably securing the liner thereto, the cover having an opening formed therein for ingress and egress, said opening being shaped to position an animal in proper orientation relative to the basin, said cover having the configuration, and performing the function, of a deflector to prevent scattering of the litter and waste under conditions of normal use.

3,771,494
MILKING INFLATIONS
Geoffrey Spottiswoode Mills, Walton, Hamilton, New Zealand
Filed May 24, 1972, Ser. No. 256,457
Claims priority, application New Zealand, May 27, 1971, 163789
Int. Cl. A01j *5/06*
U.S. Cl. 119—14.47 9 Claims



A teat cup milking inflation is disclosed, said inflation being constructed from a natural or synthetic rubber material or from an elastomeric plastics material and having an integral flexible and resilient collar portion with a tapered feathered inner edge portion surrounding the mouth of the inflation. The tapered edge portion of the collar has a flat upper edge portion which can lie flat on the surface of an animal's teat when the inflation is engaged thereon, the collar being flexed inwardly of the inflation so that the tapered feathered edge portion is directed downwardly towards the end of the teat.

3,771,495
POULTRY CAGE FLOOR AND POULTRY CAGE
Graham T. Stevenson, and Charles Johnston, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Jan. 10, 1972, Ser. No. 216,616
Int. Cl. A01k *31/00*
U.S. Cl. 119—17 14 Claims



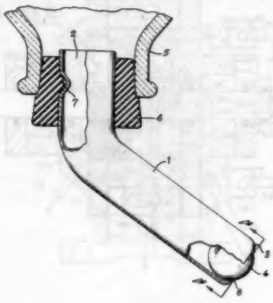
A poultry cage for confining poultry during growth which will reduce the incidence of blisters on the keel bursa of the poultry comprises a base, a plurality of vertically disposed side walls which define an enclosure, and a floor in the form of a sheet of generally planar configuration positioned within the enclosure for supporting the poultry. The floor has a plurality of openings to allow the passage of poultry droppings therethrough and comprises a flexible, resilient layer of an elastomer such as polyvinylchloride. In another embodiment, the floor comprises a flexible, resilient layer of an elastomer such as cellular polyurethane and a wear resistant layer such as burlap bonded to the upper surface of the cellular polyurethane to protect the floor against wear by the poultry.

3,771,496

DEMAND DELIVERY PUMP FOR SMALL ANIMALS

Frank William Atchley, 1106 Hardman Ave., Napa, Calif.

Filed Oct. 26, 1971, Ser. No. 167,703
Int. Cl. A01k *07/00*
U.S. Cl. 119—72.5 9 Claims



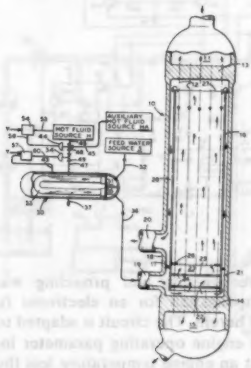
A pump device for dispensing water to create and small animals. The device comprises a tube body attached to a bottle container with a resilient closure and having a ball control adapted to close off, but not mechanically seal, the tube end opening and to control fluid flow by piston action and augmentation of liquid surface tension phenomena. A vacuum is maintained in the bottle and a meniscus is formed at the outlet end of the tube with the control ball. Normally water will flow only when the control ball is manually forced away from the outlet end. Pressure relief means, formed at the outlet end of the tube, has means to space the control ball from a portion of the outlet to prevent a mechanical seal therebetween and to relieve excessive pressure build-up in the bottle.

3,771,497

VAPOR GENERATOR CONTROL

Theodore S. Sprague, Hudson; John Schlicting, Akron, both of Ohio, and Bertrand N. McDonald, Lynchburg, Va., assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Apr. 26, 1972, Ser. No. 247,543
Int. Cl. F22b *1/02*
U.S. Cl. 122—32 10 Claims



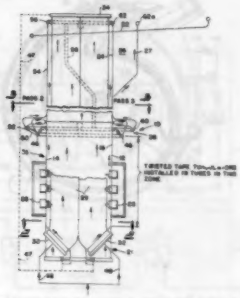
A vapor generating system comprising a pressure vessel wherein secondary liquid is vaporized through indirect heat exchange with a hot primary fluid and including a control arrangement whereby thermal shock stresses in the vessel are limited by controlled preheating of secondary liquid being fed thereto.

3,771,498

FURNACE CIRCUIT FOR VARIABLE PRESSURE ONCE-THROUGH GENERATOR

Walter P. Gorzegno, Florham Park, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Continuation of Ser. No. 144,516, May 18, 1971. This application Jan. 3, 1972, Ser. No. 214,696
Int. Cl. F22b *29/06*
U.S. Cl. 122—406 S 9 Claims



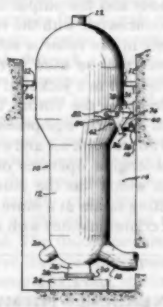
A vapor generator of the once-through type suitable for variable pressure operation, wherein the generator can be operated at a pressure which is proportional to load. The generator furnace enclosure is defined by at least two flow passes in series flow relationship, the first pass constituting the full periphery of the lower part of the enclosure, the second pass constituting at least part of the upper part of the enclosure. The first pass extends to an elevation above the burners and is located in the generator circuitry so that it has a subcooled fluid entering it. It is sized so that a steam and water mixture leaves the pass having a quality of approximately 30 percent at about 2,400 psi operation and about 70 percent load.

3,771,499

STEAM GENERATOR CRADLE SUPPORT

Michael A. Marroni, Jr., Weatogue, and Daniel A. Peck, South Windsor, both of Conn., assignor to Combustion Engineering Inc., Windsor, Conn.

Filed Dec. 30, 1971, Ser. No. 213,865
Int. Cl. F22b *37/24*
U.S. Cl. 122—510 5 Claims



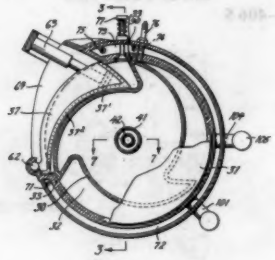
Means for laterally supporting a nuclear steam generator against the effect of seismic loadings or other shock loadings imparted by external or internal causes are disclosed. Support is provided by means of a stiffening structure incorporating a shock suppressor apparatus which operates through the lever arm of a mechanical linkage. The apparatus is designed to permit unrestrained lateral movements caused by thermal growth of the equipment, but undesired lateral loadings, such as those caused by earth tremors or equipment failure, automatically render the apparatus operative to support the steam generator against these loadings.

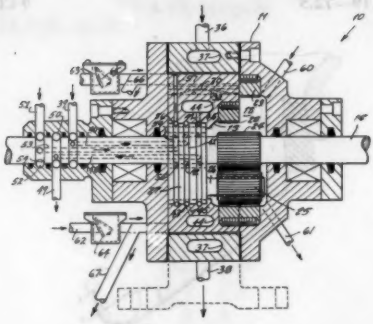
3,771,500

ROTARY ENGINE

Hosein M. Shakiba, 4527 Walnut St., Philadelphia, Pa.

Filed Apr. 29, 1971, Ser. No. 138,681
Int. Cl. 418 *86;* **F02b** *53/06;* **F01c** *1/00*
U.S. Cl. 123—8.09 **10 Claims**





A rotary engine having a power generating rotor with a plurality of chests at the outside of the rotor, the rotor being rigidly connected to a concentric shaft and within a housing of circular cylindrical form. Each of the chests has a power generating or pressure wall and a trailing cam, and the chest which delivers the fuel generating stroke is closed at that time by a plunger and the circular housing of the rotor. In one form of the invention, combustion drives the rotor around. The highly compressed combustion gases escape through an exhaust port as the chest is rotated to coincide with the position of the exhaust port. The chest then comes to an air intake while some part of it still communicates with the exhaust port, The rush of air into the chest helps the exhaust gases, which have gained some momentum during escape, to clear out of the chest into the exhaust pipe. Some air goes out of the exhaust port sweeping combusted gases ahead of it. The chest is then filled with partly pressurized air and rotates to a position where the plunger enters it and further pressurizes the air by reducing the free space available in the chest, suitably by spring action. Just as the plunger reaches the lowest position in the chest, the charge valve opens and injects superheated fuel vapor into the air in the enclosed space of the chest. A spark ignites the highly compressed mixture, and the expansion caused by combustion rotates the rotor around. The operation is continuous and the output torque is taken by the drive shaft which is concentric with the rotor and the housing. The number of chests in the rotor is subject to design variation, but at least three will be used in this form. The fuel is vaporized and superheated in a jacket of the rotor housing before entering the chest in the rotor. The engine does not require conventional cooling equipment or a conventional carburetor and does not require air and exhaust valves.

A variation of the engine operates on steam, introducing steam into the chest which has the plunger at its innermost position, and exhausting steam at a more advanced position at which another chest communicates with the exhaust.

3,771,501

ROTARY PISTON ENGINE WITH MULTI EXPLOSION CHAMBERS

Tibor Louis DeDobo, Highland Park, N.J., assignor to Aranka Elisabeth de Dobo, Basel, Switzerland

Filed Nov. 1, 1971, Ser. No. 194,196
Int. Cl. F02b *55/14;* **F01c** *1/02;* **F04c** *17/02*
U.S. Cl. 123—8.45 **11 Claims**

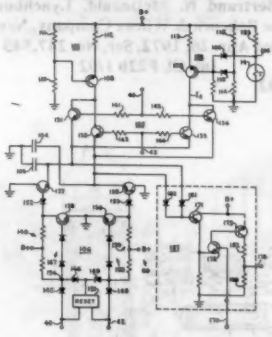
An improved rotary piston engine which provides a plurality of explosion chambers formed by the trochoidal contour of the rotary piston relative to quadrachoidal housing configuration whereby explosions occur in more than one chamber during a single rotation of the piston. The provision of multi-explosion chambers produces greater power and efficiency than in conventional rotary engines which have one explosion chamber. This improved engine also incorporates novel twin seals separating the various compression, exhaust and explosion chambers and is provided with an effective cooling system. The rotary piston is eccentrically mounted about the main drive shaft and power is transmitted from the piston to the main drive shaft via a novel planetary gear system.

3,771,502

CIRCUIT FOR PROVIDING ELECTRONIC WARM-UP ENRICHMENT FUEL COMPENSATION WHICH IS INDEPENDENT OF INTAKE MANIFOLD PRESSURE IN AN ELECTRONIC FUEL CONTROL SYSTEM

Junuthula N. Reddy, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 20, 1972, Ser. No. 219,490
Int. Cl. F02b *3/00;* **F02n** *17/00*
U.S. Cl. 123—32 EA **1 Claim**



A circuit for recognizing and providing warm-up enrichment fuel compensation for an electronic fuel control system is described herein. The circuit is adapted to recognize and respond to an engine operating parameter indicative of engine operation at an engine temperature less than the normal operating temperature and to increase the duration of the fuel injection command pulse generated by the main electronic fuel control system. In those electronic fuel control systems which provide a fuel injection command pulse whenever a generated voltage wave shape is below a threshold value, the present invention contemplates altering the shape of the generated wave shape to delay its excursion through the threshold value.

3,771,503

TWO-STROKE INTERNAL COMBUSTION ENGINES

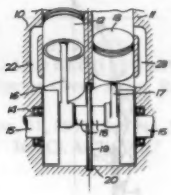
Jean-Pierre Pirault, Maidenhead, England, assignor to Vandervell Products Limited, Maidenhead, Berkshire, England

Filed Feb. 25, 1972, Ser. No. 229,317

Claims priority, application Great Britain, May 26, 1971, 17,305/71

Int. Cl. F02b *33/04*

U.S. Cl. 123—55 R 7 Claims



The specification discloses a two cylinder two stroke engine in which the cylinders are arranged in V-formation. The cylinders contain pistons connected to a crankshaft located in a crankcase and fuel-air mixture in pre-compressed in the crankcase prior to admission to the cylinders. The crankcase is divided into two separate pre-compression chambers, are for each cylinder, by a sealing disc rotatably mounted on the crankshaft and in sealing engagement around its periphery with the crankcase.

3,771,504

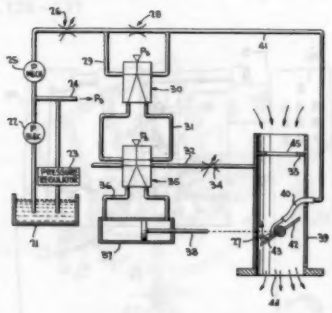
FLUIDIC FUEL INJECTION DEVICE HAVING AIR MODULATION

Robert L. Woods, Kensington, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 15, 1972, Ser. No. 253,069

Int. Cl. F02m *7/06;* F02d *11/08;* F02n *37/14*

U.S. Cl. 123—119 R 9 Claims



Means for regulating the air-fuel mixture ratio in a fuel delivery system. The present invention departs from other known fuel delivery systems in that the air flow is scheduled as a function of the operator's selected fuel flow. In conventional systems the fuel flow is scheduled as a function of the operator's selected air flow. Fluidic technology is utilized in a preferred embodiment for the sensing, computation, and actuation of the required variables.

3,771,505

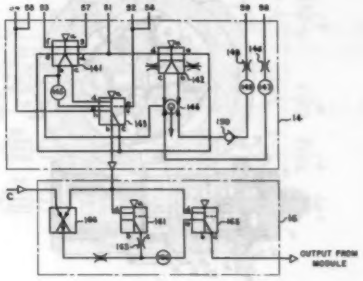
FLUIDIC FUEL INJECTION SYSTEM HAVING TRANSIENT ENGINE CONDITION RESPONSIVE MEANS TO CONTROLLABLY EFFECT THE QUANTITY OF FUEL INJECTED

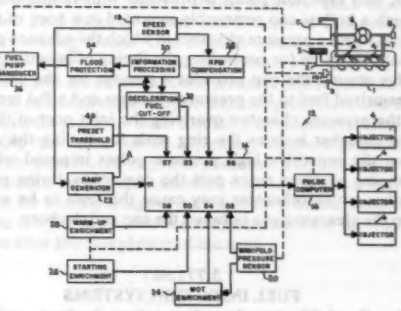
Lael B. Taplin, Livonia, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 30, 1972, Ser. No. 239,678

Int. Cl. F02d *11/08;* F02m *7/06;* F02n *37/14*

U.S. Cl. 123—119 R 14 Claims



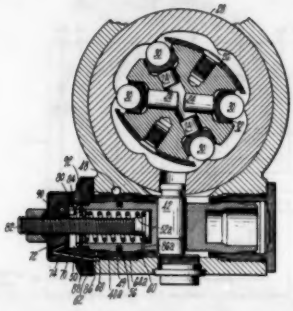


A fluidic fuel injection system to provide intermittent injection of fuel to an internal combustion engine is disclosed herein. The system receives fluid signals from various sensors and circuits to indicate engine operating parameters and processes these signals through a pulse generator and a pulse computer to provide an output fluid pulse to be applied to various injector valve means to control those injector valve means to deliver metered quantities of fuel to the associated engine. The pulse generator means is adapted to receive both pulse (digital) and variable level (analog) signals having varying responsiveness to the associated engine parameter in order to compensate for rapidly changing and slowly changing operating conditions of the engine and to generate a pulse (digital) output signal. The fluidic circuits to which the pulse generator is responsive include speed pulse signal generating means, speed compensation means, starting and warm-up enrichment means as well as timing phase adjustment means. The pulse generator means is primarily responsive to the speed pulse signal and a signal indicative of the engine manifold pressure to generate a basic pulse whose duration may be modified by one or more of the previously mentioned circuits. The pulse computer operates to extend the duration of the pulse produced by the pulse generator to provide additional time for resetting of the pulse generator prior to the generation of the next following pulse. Additionally, means are illustrated for controllably varying the output of the pulse computer in response to an engine operating parameter to provide further control flexibility.

3,771,506
FUEL INJECTION PUMP AND AUTOMATIC TIMING MEANS THEREFOR

Charles W. Davis, Simsbury, Conn., assignor to Stanadyne, Inc., Hartford, Conn.

Filed June 7, 1972, Ser. No. 260,393
Int. Cl. F02m *39/00*; F04b *13/02*
U.S. Cl. 123—139 AQ 4 Claims

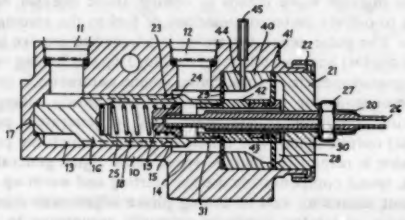


A fuel injection pump is provided with timing control in which a hollow cap removably mounted in a bore of the fuel pump forms a pressure chamber in which the advance piston is axially movable for controlling the timing of injection. An annulus around the cap provides a passage for the delivery of pressurized fuel to the pressure chamber and a flat reed valve in the pressure chamber overlying the inlet port of the pressure chamber isolates the ring seals for sealing the annulus from the repetitive high pressure pulses imposed when the pumping plungers move past the cam lobes during pumping strokes which otherwise may cause the seals to be extruded into the clearance gap between the cap and the bore.

3,771,507
FUEL INJECTION SYSTEMS

Brian Carol Silvester, Leamington Spa, England, assignor to Associated Engineering Limited, Leamington Spa, Warwickshire, England

Filed Sept. 30, 1971, Ser. No. 185,090
Claims priority, application Great Britain, Sept. 30, 1970, 46594/70
Int. Cl. F02m *39/00*
U.S. Cl. 123—139 AW 5 Claims



This invention relates to a fuel injection system and to a fuel pressure regulator therefor. A fuel injection system, for injecting pressurised fuel into an inlet duct or manifold of an engine includes a fuel-flow metering orifice which is fed with the pressurised fuel and which is exposed on its downstream side to the pressure obtaining in the inlet duct or manifold, and a fuel pressure regulator is arranged to regulate the fuel to a pressure which exceeds the inlet duct pressure by an amount which increases with increasing inlet duct absolute pressure.

3,771,508
TAKE-DOWN ARCHERY BOW

Richard I. Black, Closter; Robert B. Hartman, Bridgeport, and Henry G. Tucker, Norwalk, all of Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

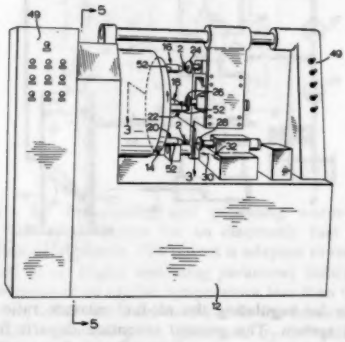
Filed Sept. 24, 1971, Ser. No. 183,512
Int. Cl. F41b *5/00*
U.S. Cl. 124—24 11 Claims

A takedown bow that is so constructed so as not to be readily discernible as a takedown type. An assembly of a hidden pin and socket is disposed within the surfaces to couple the limbs to the center handle, and also to resist the cantilever forces in the plane of the bow string developed during the bow draw. The joining surfaces are provided with pin and socket assemblies to assure alignment of the limbs and handle portion. An assembly offset from a pin and socket assembly functions to prevent twisting of a bow limb relative to a handle portion. The juncture of a limb and a handle portion may be a V-notch in the direction of belly to back of the bow, side to side of the bow, or be merely a flat surface. A resilient pad may be used at the juncture of a bow limb and handle portion.

3,771,509
TRANSFER TABLE AND BASE STRUCTURE FOR SHAPING

John Ronald Murchie, Downsview, Ontario, Canada, assignor to True Tech Equipment Limited, Ontario, Canada

Filed Nov. 26, 1971, Ser. No. 202,106
Int. Cl. B25b *5/02*; B24b *53/12*
U.S. Cl. 125—11 R 11 Claims



In a machine for shaping workpieces such as abrasive wheels, a transfer table is rotatably mounted on a base. Rotatably mounted in the transfer table are four collets for holding workpieces. Each collet is biased to a rear position by a spring acting against a push rod connected to each collet.

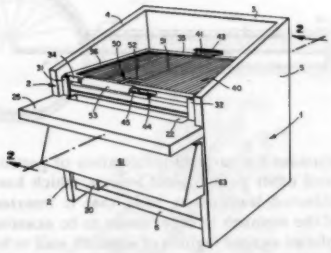
The transfer table is rotated in 90° increments and is located between turns by a plunger fixed to the base and moveable forwardly to engage a depression in the rear surface of the push rod located in front of the plunger. The plunger moves forward sufficiently not only to locate the transfer table but also to push the push rod and collet forwardly to open the collet and free the workpiece therein. Air is injected through the plunger and push rod to clear the collet. The remaining collets are spun by resilient gears connected thereto and which, as the transfer table turns to an indexed position, move into mesh with rotating resilient gears mounted on the base. The gears have teeth and roots of circular profile to facilitate meshing.

3,771,510

COOKING AND BROILING APPARATUS

D. Emmett Short, Spring Creek Farm, R.D. No. 2, Box 318, Quakertown, Pa.

Filed Nov. 21, 1972, Ser. No. 308,525
Int. Cl. A47j *37/07*
U.S. Cl. 126—41 R **6 Claims**



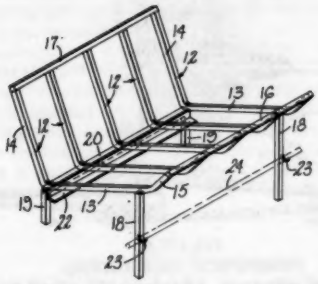
A gas type commercial appliance having a grill which can be easily and rapidly set up horizontally to accept utensils for cooking, or alternatively tilted for the broiling of edibles and including an air cooling means for the gas control valve to prevent the same from binding under various cooking conditions whereby to insure that the same is instantly adjustable.

3,771,511

GRATE

Emil F. Dahlquist, 31 Morgan Park, Clinton, Conn.

Filed Apr. 5, 1972, Ser. No. 241,314
Int. Cl. F23h *13/02*; F24b *1/26*
U.S. Cl. 126—137 **3 Claims**



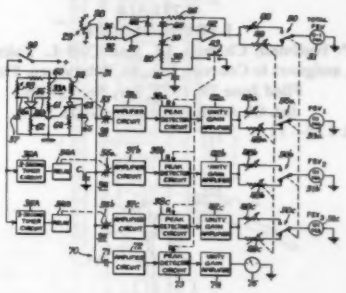
A fireplace grate includes a log supporting portion disposed at an angle to the horizontal such that self-feeding of logs is effected while providing a source of radiant heat from the underside of the logs. Also provided are support means below the log supporting portion for a food carrying member.

3,771,512

SYSTEM FOR MEASURING TIMED FORCED EXPIRATORY VOLUME

William C. Jones, 16 W. 328 Walnut Ln., Timber Trails, Elmhurst, and Harry R. Jones, Hinsdale, both of Ill., assignors to said William C. Jones, by said Harry R. Jones

Filed Aug. 19, 1971, Ser. No. 173,173
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **6 Claims**



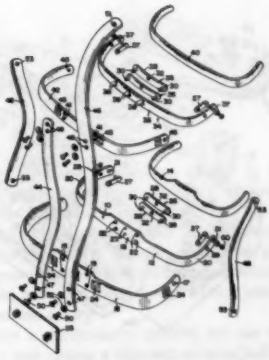
The system generates a signal representative of instantaneous forced expiratory volume for three successive tests. The signal is fed to a multi-channel analog memory. Each channel includes a peak detector circuit and a meter or other recording or measuring means. One channel measures and records the largest value of total forced expiratory volume for the three tests; and the other channels measure and record the largest value of forced expiratory volumes at predetermined time increments for the three tests. Circuitry is included for directly computing the timed forced expiratory volumes as percentages of the total forced expiratory volume. The three tests are also recorded on a graph. Another memory channel may be included for storing a signal representative of the maximum flow rate for the tests. The memory channels are all reset in common after the completion of the tests.

3,771,513

SPINAL BRACE

Tony Velazquez, 516 S. Howard Ave., Tampa, Fla.

Continuation-in-part of Ser. No. 723,357, April 23, 1968. This application Dec. 8, 1971, Ser. No. 205,901
Int. Cl. A61f *5/02*
U.S. Cl. 128—78 **19 Claims**



An orthopedic spinal brace comprising a single or double pelvic band, back uprights and straps or anterior chest plate

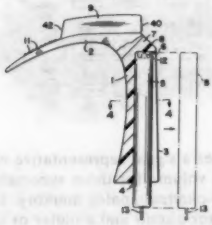
for affixing the brace to the patient's body, a thoracic band or cross piece members attached to the upper portion of the back uprights, all detachably secured together by a fastener enabling the interchangeability of said brace elements. The fastener comprises a one piece strip having a plurality of internally threaded protrusions mounted thereon and arranged to engage threaded connectors in locking relationship thereto. In addition a cervical attachment and lateral side uprights may be added to the basic brace.

3,771,514

LARYNGOSCOPE

John P. Huffman, Chicago, Ill., and Carl L. Foltz, Holiday, Fla., assignors to Concept, Inc., St. Petersburg, Fla.

Filed June 29, 1971, Ser. No. 157,852
Int. Cl. A61b *1/06, 1/26;* G02b *5/04*
U.S. Cl. 128—11 7 Claims



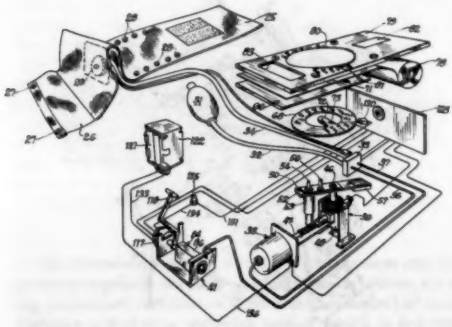
A laryngoscope which allows concurrent direct and indirect viewing of the larynx, especially when direct viewing is difficult or otherwise impossible. Such indirect viewing is permitted by the use of a prism or lens so arranged in the instrument that adequate working room is provided alongside the prism for direct viewing of the larynx and for insertion and removal of instruments, such as an endotracheal tube, and in which the prism also provides a "bite block". High intensity illumination is provided by a removable and replaceable source of battery power, conductors and a high intensity light source through the handle grip of the instrument.

3,771,515

AUTOMATIC RECORDING SPHYGMOMANOMETER

Mathew Hurwitz, 63 Oakland Ave., Auburndale, Mass.

Filed Sept. 2, 1971, Ser. No. 177,405
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 G 10 Claims



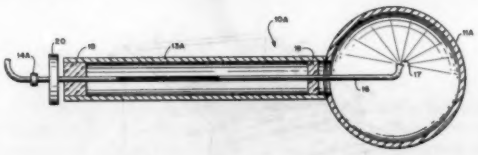
An automatic blood pressure recording apparatus which eliminates or minimizes substantially all known sources of human error in sphygmomanometry. A uni-directional micorphone maximally sensitive to Korotkoff sounds is contained within the cuff donned by the subject. Analog signals from the microphone are amplified, and digitalized by an electronic circuit whose digital output pulses occur in synchronism with the Korotkoff sounds. Each output pulse actuates a printing stylus which produces a mark on a stationary record chart resulting in a series of marks. The stylus position is controlled by cuff pressure. Thus, the positions of the first and last marks indicate systolic and diastolic pressures.

3,771,516

SURGICAL LOCALIZATION AND CONTROL OF GASTRO-INTESTINAL BLEEDING

William P. Corriero, 74-1st St., Garden City, N.Y.

Filed Apr. 14, 1972, Ser. No. 244,067
Int. Cl. A61b *1/06*
U.S. Cl. 128—23 4 Claims



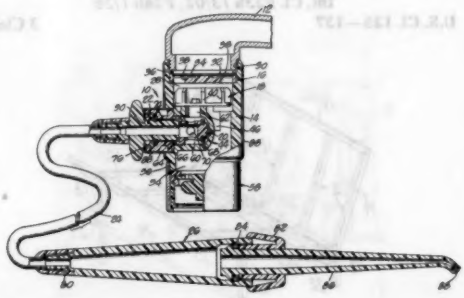
An instrument for surgical localization of gastro-intestinal bleeding and other pathological lesions, which has an internally illuminated translucent body that is inserted into an opening of the stomach or other tissue to be examined at surgery and placed against regions of stomach wall to be exposed for examination. Light projected from the body through stomach wall regions stretched over the body localizes bleeding lesions in such regions by visual contrast.

3,771,517

ORAL HYGIENE DEVICE UTILIZING A PULSED JET OR WATER

Tony Radecki, Glendale, Calif., assignor to Modern Faucet Mfg. Co., Los Angeles, Calif.

Filed Aug. 18, 1972, Ser. No. 281,636
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 9 Claims



An oral hygiene device utilizing a pulsed jet of water which is adapted to be secured to a water faucet and provide pulses of water for cleaning teeth and massaging a person's gums which comprises a housing, the upper end of which is adapted for threaded engagement with the faucet, and which carries a swirl plate which directs the incoming water flow against a rotor freely mounted in the housing. The rotor is thereby caused to rotate within the housing, periodically positioning

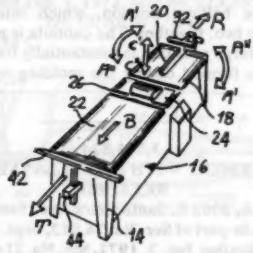
an aperture therethrough over a channel which communicates with a valve chamber and valve. The force of the water entering the valve chamber biases the valve in the closed position, whereupon all the water flow bypasses the valve and exits the bottom of the housing. The valve is opened by inserting a nipple therein which communicates through a flexible tube with a hollow wand. With the valve held open by the nipple, a portion of the water flow through the device periodically enters the valve chamber and passes through the valve and nipple, whereupon the resulting pulses are directed against one's teeth and gums by means of the hollow wand.

3,771,518

APPARATUS FOR SPECIFIC LUMBAR TRACTION TREATMENTS

Hans Greissing, Milano, Italy, assignor to Static-S.p.A., Milano, Italy

Filed Feb. 16, 1972, Ser. No. 226,673
Int. Cl. A61f 5/00
U.S. Cl. 128—71 **10 Claims**



An apparatus for selectively and specifically exerting either continuous or intermittent traction and complementary treatments to the lumbar spine region of a patient accomodated on a platform system and having pelvic and thoracic belts secured to traction and counter traction applying bars. The platform system includes a thoracic platform supported for selective lateral tilting adjustment, a lumbar support the upward projection of it can be selectively adjusted and a pelvic and leg platform supported for lengthwise displacement. The apparatus comprises also a mechanism for applying either continuous or intermittent motion to one bar to apply the traction with a selectively adjusted maximal tractive force. Further, the apparatus is preferably complemented with an anti-scoliosis unit wherein a selectively positionable and rotatable leg supporting platform is provided for positioning the patient for specific anti-scoliosis treatments.

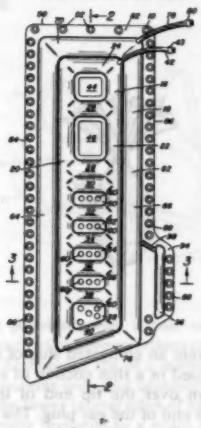
3,771,519

ORTHOPEDIC SUSPENSION

P. William Haake, 729 Quaker Rd., Scottsville, N.Y.

Filed Mar. 20, 1972, Ser. No. 236,132
Int. Cl. A61f 5/40
U.S. Cl. 128—94 **22 Claims**

An orthopedic suspension or splint which is especially adapted for balanced suspension is described. The suspension is provided by a body of soft, flexible, non-metallic material. Rigidity for immobilization and alignment of the limb during the recovery period is provided by longitudinal and transverse air cells which are inflated at the time of installation of the suspension. The suspension is semi-rigid and bends at the exact point where the joints of the limb flex, thus facilitating installation and avoiding the need for additional attachments.



3,771,520

INTRAUTERINE DEVICE INSERTER

Irwin S. Lerner, Greenwich, Conn., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Filed Nov. 9, 1970, Ser. No. 87,663
Int. Cl. A61f 5/46
U.S. Cl. 128—127 **15 Claims**

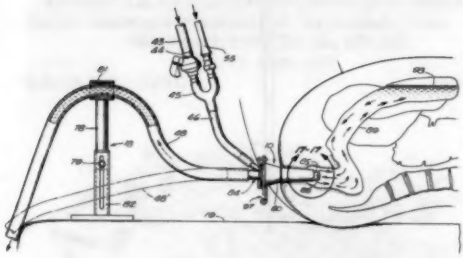
An inserter for an intrauterine device is shaped with a slender, elongated body and includes at one end thereof means whereby the intrauterine device may be firmly retained upon the inserter. Rotation of the inserter relative to the intrauterine device effects release of the intrauterine device from the inserter thereby permitting unobstructed withdrawal of the inserter with the intrauterine device being left in place within the uterine cavity.

The inserter is particularly suitable for use with an intrauterine device comprising a ring and an attached membrane extending thereacross. With the intrauterine device in the mounted position, notch means on one side of the inserter engage the ring with the membrane extending about the opposite side of the inserter.

3,771,521
EAR PLUGS
Peter H. Kittredge, 6449 Longridge Ave., Van Nuys, Calif.
Filed June 19, 1969, Ser. No. 834,853
Int. Cl. A61f 11/02
U.S. Cl. 128—152 7 Claims

An ear plug wherein an elongated slug of nonslumping silicone putty is enclosed in a thin cocoon of synthetic organic polmeric film drawn over the tip end of the ear plug and gathered at the base end of the ear plug. The gathering of the film forms longitudinally extending folds or grooves on the exterior of the ear plug. The gather at the base end of the ear plug is tied, and the excess polmeric film is fused down to form an integral knob adjacent to or fused with the tie off member by which the ear plug is grasped for insertion and removal.

3,771,522
SYSTEM AND APPARATUS FOR LAVAGING THE LOWER INTESTINAL TRACT
John J. Waysilk, and Enid A. Waysilk, both of 7295 Cherokee Trl., Yucca Valley, Calif.
Filed Dec. 3, 1971, Ser. No. 204,639
Int. Cl. A61m 3/00, 7/00
U.S. Cl. 128—227 17 Claims

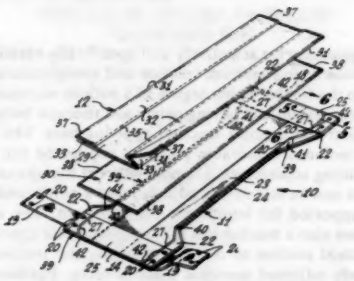


A system is disclosed which provides for lavaging the lower intestinal tract of a patient by the use of an instrument that is adapted to be inserted into the anal canal of a patient. The instrument is provided with an inlet passageway and an outlet passageway. Auxiliary apparatus is provided for controlling the supply of water flowing by way of inlet tubing into the inlet passageway of the instrument so that the water is introduced into the lower intestine with a negligible amount of force in order to insure the safety and comfort of the patient. Furthermore, discharge tubing on the outlet passageway of the instrument is held at a predetermined height by a water-level-regulator so that the inflowing water can be retained to penetrate the lower intestine at a desired height.

3,771,523
DISPOSABLE DOUCHE
Joseph Zanca, c/o Zanca Molding Corp., 1622-62nd St., Brooklyn, N.Y.
Filed Aug. 2, 1972, Ser. No. 277,195
Int. Cl. A61m 7/02
U.S. Cl. 128—232 6 Claims

A disposable douche is provided which comprises a cannula and a flexible bellows portion, which interfit by simply pressing of the two, together. The cannula is provided with at least one discharge port that is substantially free of any plastic minutia and is formed during the molding operation of the cannula.

3,771,524
DIAPER GARMENT WITH INTERLEAVED LINER AND RETAINER
Harold J. Ralph, 2002 E. Santa Clara Ave., Santa Ana, Calif.
Continuation-in-part of Ser. No. 74,013, Sept. 21, 1970. This application Jan. 3, 1972, Ser. No. 214,974
Int. Cl. A41b 13/02
U.S. Cl. 128—287 6 Claims



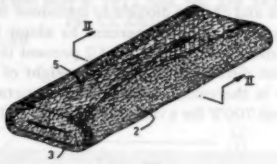
A moisture-impervious snap-on retainer comprising a generally rectangular main body panel with side and end flaps on one side defining a reservoir, and an absorbent liner comprising a rectangular central panel underlying said flaps, and an integral V-shaped pleat along each side of the liner defining laterally opening slit and formed by a barrier panel beneath the side flap of the retainer and a protective panel joined to the barrier panel to substantially cover the side flap, both to minimize contact with the wearer and to frictionally hold the liner against slipping in the retainer. The end flaps loosely overlie the side flaps and have seals offset outwardly from the side flaps, and the pleats normally are maintained flat by lines of stitches along folded margins of the panels forming the pleats.

3,771,525

SANITARY NAPKIN HAVING COMPRESSED CORE

Robert Chapuis, Grenoble, France, assignor to Etablissements Ruby, Voiron (Isere), France

Filed Dec. 17, 1971, Ser. No. 209,174
Claims priority, application France, Dec. 23, 1970, 7046473
Int. Cl. A61f 13/16
U.S. Cl. 128—290 R 7 Claims



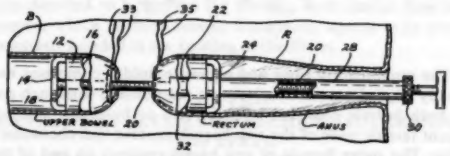
Sanitary napkin comprises flexible absorbent mass surrounding core of compressed hydrophilic fibers.

3,771,526

ANASTOMOSIS CLAMP

Peter S. Rudie, 302 Mid Art, Duluth, Minn.

Filed Feb. 7, 1972, Ser. No. 223,955
Int. Cl. A61b 17/11
U.S. Cl. 128—334 C 8 Claims



An anastomosis clamp including a first clamping collar, a second clamping collar, a support rod connected to the first collar with said second collar having a support member slidable on said support rod, each of the opposed edges of said collars being formed with undulations which mate, and means for urging said clamping collars together.

3,771,527

SURGICAL DRAINAGE TUBE

Joseph L. C. Ruisi, Westerly, R.I.

Filed Aug. 16, 1971, Ser. No. 176,761
Int. Cl. A61m 27/00
U.S. Cl. 128—350 R 3 Claims

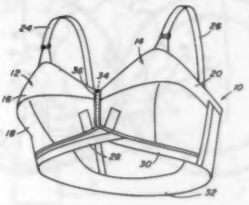
A surgical drainage tube comprising inner and outer concentric tubular portions, each having apertures adjacent their distal ends, means connecting the proximal end of the inner tube to a source of suction, and a cap closing off the proximal end of the outer tube with the inner tube extending through said cap, said cap being constructed of a penetratable self-sealing material whereby fluids may be injected through said cap to the annular chamber located between said inner and outer tubes, in order that desired fluids may be introduced to the cavity being drained, while suction is simultaneously taking place.

3,771,528

BRASSIERE

James L. May, P.O. Box 938, 219 S. O'Connor St., Irving, Tex.

Filed May 25, 1972, Ser. No. 256,875
Int. Cl. A41c 3/00
U.S. Cl. 128—498 2 Claims



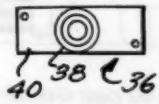
A brassiere is provided with a pair of underbust pieces separately attached to the lower portions of the cups and to an encircling band. The pieces are of a material that is stretchable in certain directions only and unstretchable in a direction beginning from the lower lateral edge of each underbust piece extending diagonally upwards to a point at or near the mid-center of the lower edge of a seam formed between the cups. The length and width of the garment adjusts according to tension placed on the underbust pieces by the band and the volume of the lower portions of the cups varies generally according to the amount of tension placed laterally on the lower portions of the cups and the underbust pieces. A floating stay is provided between the cups to control the change in volume of the lower portions of the cups.

3,771,529

LONGITUDINALLY AND VERTICALLY ADJUSTABLE ARCH SUPPORT FOR A SHOE

William M. Matteson, 2210 North St., Nacogdoches, Tex.

Filed Aug. 21, 1972, Ser. No. 282,060
Int. Cl. A61f 5/14; A43b 7/14
U.S. Cl. 128—597 4 Claims



An arch support for a shoe has a plate of spring steel having a preformed arch which is engaged from beneath by an adjusting screw to vary the height and curvature of the arch. The plate has a longitudinal row of indentations in its undersurface for selective engagement by the end of the screw to permit longitudinal adjustment of the arch by moving the plate. The engagement of the screw in a selected indentation maintains the plate in its adjusted position.

3,771,530

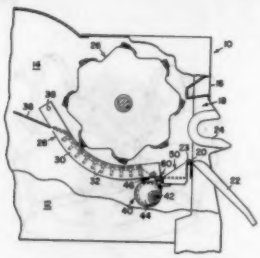
COMBINE STONE STRAP

Donald Benjamin Wassell, Port Byron, Ill., assignor to Deere & Company, Moline, Ill.

Filed June 19, 1972, Ser. No. 263,874
Int. Cl. A01f 12/20
U.S. Cl. 130—27 JT 5 Claims

A combine has a main separator body with a forward crop inlet and a transverse threshing cylinder and concave mounted behind the crop inlet. A first transversely elongated trough-shaped stone trap part is mounted on the body immediately

behind the lower edge of the crop inlet immediately in front of the concave. A second transversely elongated trough-shaped stone trap part is rigidly attached to the forward end of the concave and is vertically adjustable therewith. The second



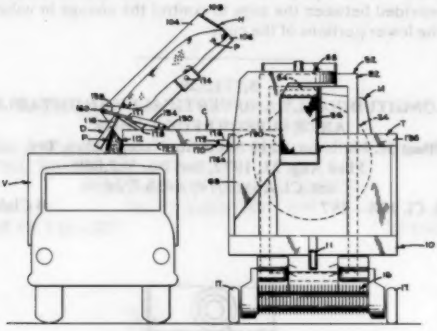
stone trap part spans the width of the concave immediately behind the first stone trap part and functions as a rearward extension of the first stone trap part to increase the stone trap capacity.

3,771,531

LEGUME HARVESTER WITH AUTOMATIC DUMP HOPPER

Frank F. Scribner, Hoopeston, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed July 17, 1972, Ser. No. 272,618
Int. Cl. A01d
U.S. Cl. 130—30 H **14 Claims**



A field harvester for peas, beans or the like picks up windrows of crops, threshes the crop and delivers the threshed crop to a carriage-mounted tiltable dump hopper. The hopper carriage is advanced to extend over a vehicle along the side of the harvester by a single hydraulic cylinder and the hopper is thereafter tilted by a pair of hydraulic cylinders connected between the carriage and the hopper. An automatic mechanical interlock prevents the hopper from tilting in its carriage until the carriage has been fully extended and prevents retraction of the extended carriage until the previously tilted hopper has been returned to its normal, crop receiving position. The carriage operating and hopper tilting cylinders are connected for operation by a single control valve that applies fluid under pressure to all cylinders simultaneously.

The hopper door is automatically opened when the hopper tilts by linkage connecting between the door and the hopper carriage and the door serves to regulate the rate of discharge flow of shelled crops such as peas, beans or the like because the degree of door opening is proportional to the degree of hopper tilt.

3,771,532

Patent Not Issued For This Number

3,771,533

PROCESS FOR PUFFING TOBACCO

Robert G. Armstrong; Edward J. Deszyck; John W. Madures, all of Richmond, Va., and Robert H. Young, East Brunswick, N.J., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,532
Int. Cl. A24b *03/18*
U.S. Cl. 131—140 P **9 Claims**

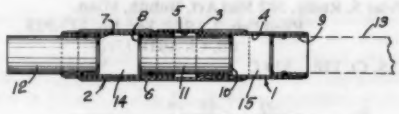
Tobacco having at least 6 percent moisture is impregnated with ammonia and carbon dioxide to introduce into the tobacco preferably from about 3 percent to about 6 percent by weight of ammonia and from about 2 percent to about 8 percent of carbon dioxide based on the weight of the tobacco. The tobacco is thereafter heated at a temperature of from 250°F to about 700°F for a time sufficient to puff the tobacco.

3,771,534

COMBINATION FILTER AND CIGARETTE HOLDER

Otto R. Kuehne, Apt. 111, 716 N. Irving Blvd., Los Angeles, Calif.

Filed Sept. 30, 1971, Ser. No. 185,223
Int. Cl. A24f *13/02*
U.S. Cl. 131—187 **1 Claim**



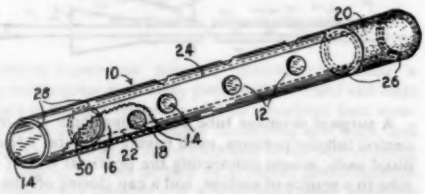
The combination filter and cigarette holder comprises two axially aligned barrels in telescopic relationship with each end of both barrels provided with ferrules or bushings. The adjacent ferrule ends of the two barrels receive therebetween a filter. The outer ferrule of one barrel receives an end of the cigarette to be smoked while the outer ferrule of the opposite barrel end receives a short length of cigarette which acts as a tip. The arrangement of the two barrels and their separation at ends from the filter tip, the cigarette, and filter cartridge provides air chambers whereby cigarette smoke is cooled during passage through the filter. The filter cartridge may be impregnated with a volatile oil such as a menthol, mint, or the equivalent to add flavor to the cigarette smoked.

3,771,535

DISPOSABLE CIGARETTE HOLDERS

Milton Mezoff, Providence, R.I., assignor to Artmor Services Inc., Pawtucket, R.I.

Filed Jan. 7, 1972, Ser. No. 216,121
Int. Cl. A24d *1/04;* **A24f** *7/00*
U.S. Cl. 131—187 **2 Claims**



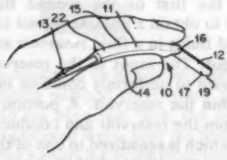
A cigarette holder is disclosed which is comprised of two equi-length concentric perforated cylindrical elements with a heat conducting element arranged between them. The cylinders are axially displaced, with the perforations out of registry, so that one extends beyond the other longitudinally. The inner

cylinder at the mouth end serves to accommodate a collar of nutrient material and the outer cylinder is provided with means facilitating the insertion and reception of a cigarette therein.

3,771,536
DENTAL FLOSS AND METHOD OF MAKING SAME
William B. Dragan, R.F.D. No. 1, Burr St., Fairfield, Conn.
Filed May 8, 1972, Ser. No. 251,241
Int. Cl. A61c *15/00*
U.S. Cl. 132—89 **6 Claims**

This disclosure is directed to an improved dental floss and a method of making it. The improved dental floss comprises a plurality of fibers, e.g., nylon fiber bonded by a non-wax coating and in which there is dispersed various therapeutic agents which are active to remove the bacteria media that promotes bacterial growth about the teeth and mouth. The disclosure is also directed to a method for forming such dental floss in a manner which permits various therapeutic agents to be simultaneously bonded in the coating of the fibers.

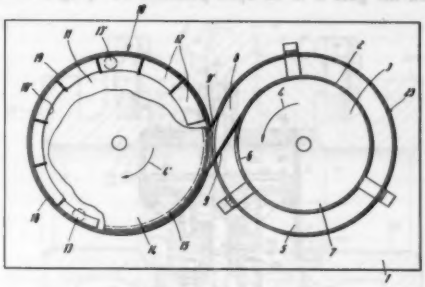
3,771,537
METHOD AND DEVICE FOR MECHANICAL CLEANING OF TEETH
Murray L. Schole, North Tarrytown, N.Y.
Filed June 9, 1972, Ser. No. 261,308
Int. Cl. A61c *15/00*
U.S. Cl. 132—93 **1 Claim**



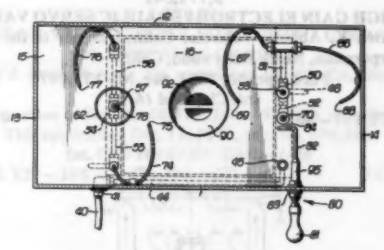
A method and device for mechanical cleaning of teeth involving the employment of a round-edged, non-cutting, flexible blade having a thickness approximating that of the interproximal spacing of adjoining, contacting teeth.

3,771,538
COIN SORTING AND COUNTING MACHINES
Katharina Maria Reis, Buchenauerstr. 19, Bruchsal/Baden, Germany
Filed July 26, 1971, Ser. No. 165,934
Int. Cl. G07d *3/06*
U.S. Cl. 133—3 D **12 Claims**

Apparatus for sorting coins of different sizes, comprising means for delivering a supply of coins of different sizes, centrifugal separating means for arranging said differently sized coins in single file, a circular sorting chamber, having a plurality of successively sized holes corresponding to the sizes of the coils to be separated and means for moving coins delivered thereto unidirectionally over said holes, a transfer channel connecting said centrifugal separating means and said sorting chamber for conveying said differently sized coins, the differently sized coins being delivered from said separating means in single file and successively sorted by being deposited in their associated holes in said chamber.



3,771,539
PAINT GUN CLEANER
Benito De Santis, 2601 W. Olive Ave., Los Angeles, Calif.
Filed May 19, 1972, Ser. No. 254,920
Int. Cl. B08b *3/02, 9/00*
U.S. Cl. 134—111 **9 Claims**

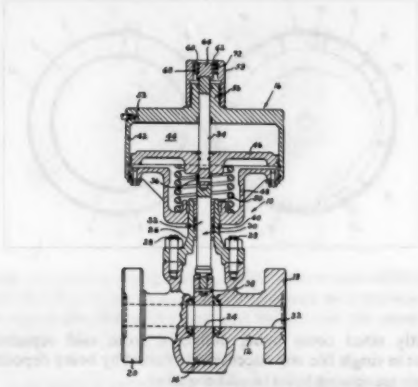


A cabinet for cleaning pain spray gun equipment has stations for mounting a container in upside down position and a spray gun in normal operating postion. From a tank under pressure solvent passes through tubing to selected locations in the cabinet where it is directed to the stations. A trip extending through the cabinet wall is attached to the trigger of the spray gun and, when air pressure is turned on to the tank, cleaning solvent is directed on and into the container and the gun, and also injected into the gun passages where paint normally is drawn. A special check valve on the tank makes it possible to build up pressure rapidly in the tank and also to release pressure rapidly on completion of the cleaning operation so that dirty solvent can be passed through a filter back into the tank for reuse.

3,771,540
SAFETY DEVICE FOR GATE VALVE ACTUATOR
Charles H. Wicke, Richmond, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Nov. 19, 1971, Ser. No. 200,303
Int. Cl. F16k *17/38*
U.S. Cl. 137—75 **4 Claims**

The end wall of a cylinder actuator for a gate valve has a threaded extension thereon with a central bore through which

a gate valve stem extends. An internally threaded cap having an end opening in alignment with the valve stem is fitted or the extension and houses a separate plug in abutting relation to the gate valve stem to restrain movement of the valve stem when the gate is in an open position. The plug is retained



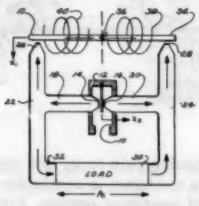
within the cap by a destructible sleeve fitting about the plug which is adapted to fail at a predetermined temperature, such as around 300°F., whereby the valve stem under bias pushes the plug outwardly through the cap opening upon failure of the destructible sleeve to permit closing of the gate at a predetermined high temperature.

3,771,541

HIGH GAIN ELECTROHYDRAULIC SERVO VALVE

Roderick K. Abbott, Valencia, Calif., assignor to the Bendix Corporation, North Hollywood, Calif.

Filed Apr. 30, 1971, Ser. No. 139,097
Int. Cl. G05d *16/00*
U.S. Cl. 137—85 **4 Claims**



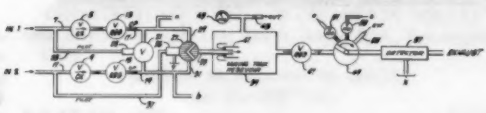
An electrohydraulic servo valve design is described having a pair of parallel-directed nozzles connected through conduits to a source of operating fluid under pressure with a load piston connected to the conduits such that its ends communicate with the pressure immediately upstream of the nozzles. A torque motor operates a flapper valve to restrict one nozzle and reduce the restriction of the other to vary the conduit pressure to create a control pressure differential across the load piston. Connected between each of the conduits and the fluid pressure source is a pair of orifices with a reed valve positioned therebetween and supported such that it responds to the control pressure differential to further restrict one of the pair of orifices while reducing the restriction of the other. In this manner, pressure in one conduit having the higher pressure is communicated to the reed valve which moves away from its corresponding orifice to permit the pressure in that one conduit to increase to a value even closer to the supply pressure than before. At the same time the pressure in the other conduit which was reduced is further reduced as the reed valve further restricts the area of its corresponding orifice. Thus, for a servo valve of a given size, the described pair of orifices and adjacent reed valve operate to substantially increase the pressure differential across the load for a given displacement of the flapper valve near null position.

3,771,542

FLUID COMBINATION APPARATUS

Andrew Sinclair Williams, Brea, Calif.

Filed Dec. 4, 1972, Ser. No. 311,493
Int. Cl. G05d *11/13*
U.S. Cl. 137—93 **15 Claims**



A first unidirectional fluid conducting device having a constant pressure output conducts fluid from a first fluid source to one input of a selector valve and a second unidirectional fluid conducting device having a constant pressure output conducts fluid from a second fluid source to another input of the selector valve. The selector valve is responsive to the pressure of the second fluid source for connecting the output of the first unidirectional fluid conducting device through the selector valve to the output thereof when the pressure of the second fluid source falls below a predetermined level. A shunt valve is connected between the inputs to the selector valve, the shunt valve being responsive to the pressure of the first fluid source for connecting together the inputs of the selector valve when the pressure of the first fluid source falls below a predetermined level. Therefore, fluid conduction to the output of the selector valve is assured from either one fluid source or the other. In addition, the selector valve is selectively operated to conduct fluid from either the first or the second fluid source in amounts as desired to obtain a predetermined combination of the first and second fluids in a fluid reservoir attached to the selector valve output. The input to the reservoir contains a Venturi mixing device to uniformly combine incoming fluids with the fluids within the reservoir. A portion of the mixed fluid is removed from the reservoir and conducted to a selective fluid detector which is sensitized to one of the fluids in the mixture. Control circuitry is attached to the detector to provide a signal to selectively operate the selector valve to conduct the required amounts of fluid from the first and second sources whereby the desired fluid combination and mixture is obtained.

3,771,543

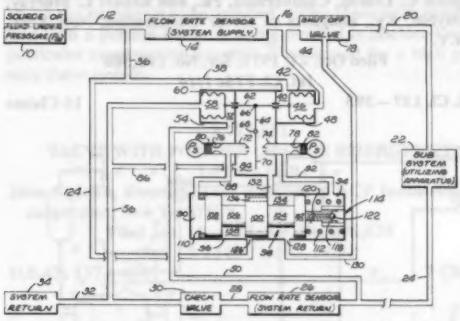
HYDRAULIC FLOW DIFFERENCE SENSOR AND SHUTOFF APPARATUS

Don A. Wiggins, Saugus, Calif., assignor to Textron Inc., Providence, R.I.

Filed May 22, 1972, Ser. No. 255,743
Int. Cl. G05d *11/02*
U.S. Cl. 137—100 **7 Claims**

A shutoff valve mechanism is placed in a hydraulic system line extending between a source of hydraulic fluid under pressure and a utilizing apparatus such as a subsystem or a hydraulic actuator. Variable orifices disposed in the source and

return flow paths produce pressure drops which vary linearly proportional with flow rate. The pressure drops are compared

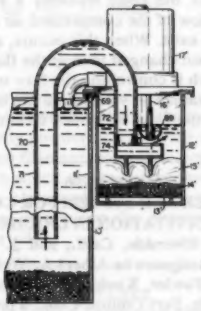


and in the event of a predetermined difference therebetween, the shutoff valve is actuated to isolate system pressure.

3,771,544
AQUARIUM SYPHON

Tibor Horvath, Brooklyn, N.Y.

Continuation-in-part of Ser. No. 186,298, Oct. 4, 1971, abandoned. This application Mar. 5, 1973, Ser. No. 338,289
Int. Cl. F04f *10/00*
U.S. Cl. 137—151 **4 Claims**



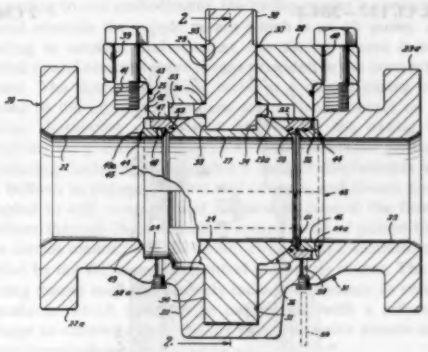
A syphon is used with an aquarium tank and a separate filter tank, water being pumped from below filter material in the filter tank into the aquarium tank, the syphon having a long leg discharging filtered water near the bottom of the aquarium tank and having a short leg in the filter tank with a check valve at the end of the short leg preventing flow into the short leg allowing the syphon to have its short leg removed from the filter tank so the filter tank may be serviced, the check valve holding water in the syphon so it will automatically start on replacing the short leg in the filter tank, the check valve having a casing containing an upward facing valve seat, a valve guide containing a valve guide aperture over the valve seat, and a spherical valve engaging the valve seat and having a stem loosely extending through the valve guide aperture.

3,771,545
BALL VALVE

Herbert Allen, Houston, Tex., assignor to Cameron Iron Works, Inc.

Division of Ser. No. 148,699, June 1, 1971, abandoned. This application Sept. 17, 1971, Ser. No. 181,354
Int. Cl. F16k *5/06*
U.S. Cl. 137—315 **19 Claims**

A ball valve having seats which have substantially spherical opposite ends which, when the seats are in seated position, engage a ball closure mounted within a chamber of the valve body and substantially spherical seating surfaces in the chamber surrounding the intersection of the inlet or outlet therewith. The ends of the seats and the seating surfaces are

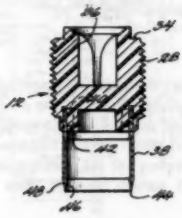


concentric with the ball closure to permit the seats to be slid within spaces between the closure and the wall of the chamber between seated position and a position generally aligned with an opening into the valve body through which both the ball closure and the seats may be passed.

3,771,546
CIRCULAR KNIFE CUTTER FOR FITTING USED WITH PLASTIC MAIN OR PIPES

Robert R. Roos, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.

Continuation of Ser. No. 46,373, June 15, 1970, abandoned. This application Oct. 11, 1972, Ser. No. 296,588
Int. Cl. F16e *41/04*; B23b *41/08*
U.S. Cl. 137—318 **7 Claims**

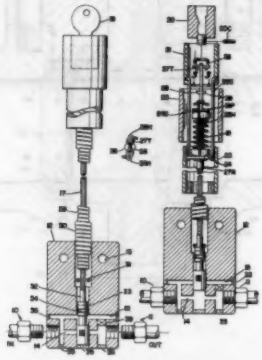


A tapping plug for use with a plastic tapping T secured to a plastic main, the tapping T being of the type having a through-bore with an interior thread and a lateral outlet communicating with the bore, and adapted to be connected to a service pipe. The tapping plug which includes a plastic plug body member having an exterior thread for engaging the interior thread of the through-bore so that the same can be advanced therethrough. The plug body has a thin wall cylindrical metal band cutter member, coaxially fixed to one end thereof. The cutter member has a knife edge defined by an internal bevelled surface and an external bevelled surface, thus providing controlled deformation of the same during cutting and resulting in a reduced cutting load between the plastic main and the plastic body member through the plastic tapping T.

3,771,547
VEHICLE LOCK

James A. Coleman, Cleveland, Ohio

Continuation-in-part of Ser. No. 175,108, Aug. 26, 1971, abandoned. This application Jan. 8, 1973, Ser. No. 321,703
Int. Cl. F16k 35/02
U.S. Cl. 137—384.2 2 Claims

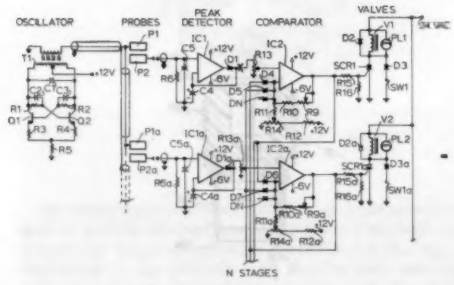


An anti-theft lock for association with a vehicle part (e.g., trunk, or hood) or system (e.g., fuel line, or hydraulic brake) has a passage which permits normal operation except when closed after manual operation of a push-button lock. To prevent long term bleed down, advantageous means are provided so that it is the thief himself who sets the brakes, closes off the gas line, or whatever.

3,771,548
CAPACITIVE MOISTURE CONTROL SYSTEM HAVING A PEAK DETECTOR

George P. Rauchwerger, Sunnyvale, Calif.

Filed Nov. 3, 1972, Ser. No. 303,306
Int. Cl. G05d 9/12
U.S. Cl. 137—392 11 Claims

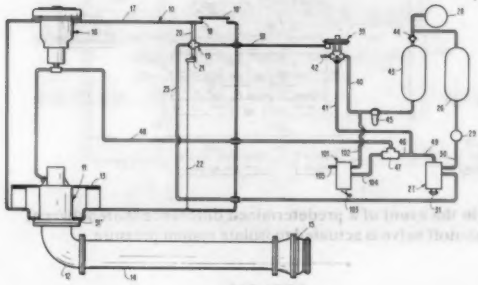


A meter for measuring moisture in soil electronically uses two probes spaced apart with soil between the probes. The probes may be insulated plates of metal or flat insulated cable made of a plurality of conductors. The circuit has an ultrasonic oscillator which transmits a signal to the probes, which function as a variable capacitor depending upon moisture content of the soil. An integrated-circut peak detector provides a positive DC voltage proportional to input peak voltage, and its output is measured by a microammeter which thus measures moisture. The output of the detector may be used to control an irrigation valve. Several probes and valves may be used in a system. The soil may be contained in a plastic bag and the electrodes applied to opposite sides of the bag.

3,771,549
SYSTEM FOR LOADING AND UNLOADING A CONTAINER AT ITS BOTTOM

Stephen C. Lemon, Cumberland, Pa., and Robert L. Murray, Dayton, Ky., assignors to Dover Corporation, New York, N.Y.

Filed Oct. 21, 1971, Ser. No. 191,386
Int. Cl. F15c 1/14
U.S. Cl. 137—393 16 Claims

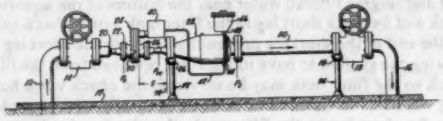


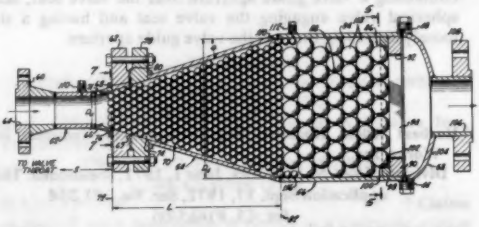
A container is loaded at its bottom until the level of the liquid in the container reaches a predetermined level. The predetermined level is sensed by a sensor, which is supported within the container, having liquid from the container flow through an opening in the sensor body when the predetermined level is reached to stop the flow of compressed air through passage in the body whereby a vacuum, which is produced by the flow of the compressed air through the body passage, ceases to exist. When this occurs, a fluidic interface valve has its position changed to stop the flow of compressed air to a valve, which is controlling the flow of the liquid to the bottom of the container. A vent in the top of the container is opened whenever the valve is opened to introduce liquid into the container.

3,771,550
BALL CANISTER AND SYSTEM FOR CONTROLLING CAVITATION IN LIQUIDS

Albert A. Webb, Riverside, Calif., and J. Paul Tullis, Fort Colling, Colo., assignors to Albert A. Webb; Fred H. Hanson, Riverside; Fowler, Knobbe & Martens, Orange, Calif. and J. Paul Tullis, Fort Collins, Colo., a part interest to each

Division of Ser. No. 95,044, Dec. 4, 1970, Pat. No. 3,731,903. This application Dec. 4, 1972, Ser. No. 311,655
Int. Cl. G05d 7/03
U.S. Cl. 137—485 1 Claim





Disclosed in a ball canister having a hollow case with an inlet and an outlet, the case having a portion which is

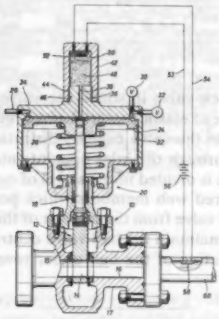
frustoconical and is filled with tightly packed balls, with the diameter and length of the ball filled case portion being sized to significantly repress cavitation in a liquid flow system into which the canister is to be inserted, either alone or in conjunction with a control valve. A sizing method is disclosed and a particular construction example is explained for a high pressure water system.

3,771,551

VALVE WITH POWDER CHARGE EMERGENCY OPERATOR

John S. John, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jan. 10, 1972, Ser. No. 216,639
Int. Cl. F16k *31/143*, *17/32*
U.S. Cl. 137—486 **7 Claims**



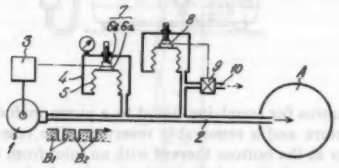
A valve actuator having a cylinder and a piston is connected to a gas generating device for closing the valve in an emergency. A gas generating powder charge in the device is ignited by a firing pin or a hot filament released or energized by a circuit including a switch which closes in response to a given condition, such as an abnormal fluid pressure or rate of flow through the valve, whereupon the generated gas moves the piston to close the valve.

3,771,552

AIR SUPPLY APPARATUS FOR ESTABLISHING CONSTANT PRESSURE IN A RECEIVING ENCLOSURE

Daiji Watanabe, Tokyo, Japan, assignor to Kabushiki Kaisha Machida Seisakusho, Tokyo, Japan

Filed Aug. 29, 1972, Ser. No. 285,097
Claims priority, application Japan, Oct. 26, 1971, 46/84319
Int. Cl. F16k *17/34*
U.S. Cl. 137—487.5 **10 Claims**



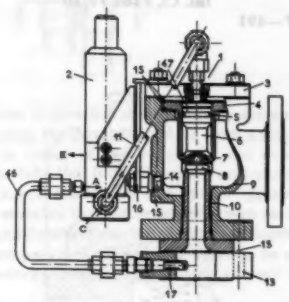
An air supply apparatus is provided for establishing a constant pressure in a receiving enclosure, such as a stomach or the like. Generally, the apparatus includes a supply means for supplying a pressure medium with connecting means being provided for connecting this supply means to the aforesaid enclosure. A timing means is moreover provided which controls the flow of medium through the connecting means to be of pulsed form. The timing means includes detecting means to determine when pressure in the connecting means reaches a predetermined level to deactivate the timing means and terminate the flow of medium through the connecting means. According to one embodiment, the timing means is connected to and controls the supply means which is an air pump. According to another embodiment, the timing means is connected to and controls valve means provided in the connecting means. The detecting means includes a closed casing connected to the connecting means and a fixed contact on the casing, therebeing provided a bellows on the casing and balancing the pressure in the casing with a reference pressure, therebeing furthermore provided a contact displaceable with the bellows to engage the first said contact, and circuit means coupled to said contacts and adapted to control the flow of medium through the connecting means to be of pulsed form. The circuit means includes an RC circuit and a solenoid controlled by the RC circuit to control the supply means. The detecting means may alternatively include a pressure to voltage transducer which operates in connection with a reference voltage to control either the air pump or valve means mentioned hereinabove.

3,771,553

PILOT-OPERATED SHUT-OFF VALVE

Paul Huet, 65 Rue Michel-Ange, Paris, France

Filed Oct. 30, 1972, Ser. No. 302,197
Claims priority, application France, Oct. 29, 1971, 7139153
Int. Cl. F16k *31/38*
U.S. Cl. 137—488 **5 Claims**



An automatic pilot-operated shut-off valve including, in the pilot valve assembly, a pilot piston which controls the operation of oppositely disposed admission and discharge valves. An additional flow control device, in the form of a spool valve, is disposed in the pilot piston for the purpose of restricting the flow between the ends thereof during the discharge valve opening cycle.

3,771,554

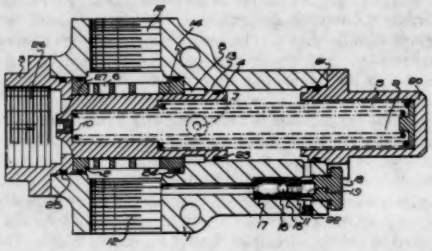
HYDRAULIC CONTROL VALVES

Donald Hassall, Sunderland, England, assignors to Coles Crane Limited, Grams; Britcranex, Sunderland, England

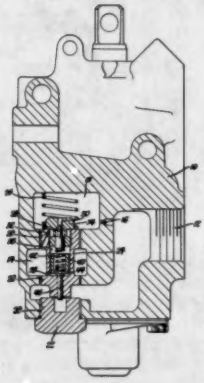
Filed May 28, 1971, Ser. No. 148,049
Claims priority, application Great Britain, May 28, 1970, 25,690/70
Int. Cl. F16k *31/36*
U.S. Cl. 137—491 **6 Claims**

An hydraulic control valve has a main body member with feed connections for respective communication with an actuator and a main control valve, the feed connections communicating internally of the body via flow orifice(s) whose effective flow area is governed by a relatively movable control member actuable in response to variation of a pilot pressure

and being movable between a fully closed and fully open conditions of the flow orifice(s), the arrangement being such that the rate of increase in effective flow area increases with increased movement of the control member towards the fully open condition of the flow orifices. A spool control member may be slidable in a sleeve and both may be surrounded by an annular feed chamber communicating with a feed connection.

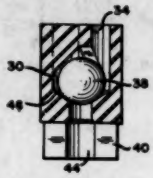


3,771,555
POWER TRANSMISSION
Carl R. Binkley, Warren, Mich., assignor to Sperry Rand Corporation, Troy, Mich.
Filed Aug. 9, 1972, Ser. No. 278,918
Int. Cl. F16k *17/10*
U.S. Cl. 137—491 **2 Claims**



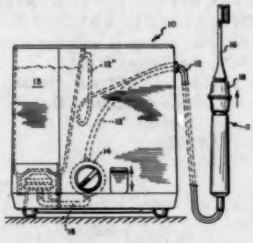
A relief valve for hydraulic power transmission systems serves not only to limit the maximum system pressure, but also to limit the rate of pressure rise in the system when subjected to sudden transients which would otherwise cause large pressure overshoots before stabilizing at the designed pressure level. A self-contained cartridge is constituted by a main relief valve spool exposed to system pressure at opposite ends and carrying internally a pilot relief valve which is opened by system pressure reacting against a spring. The spring is normally set to permit valve opening at a small fraction of the designed maximum relief pressure. System pressure also reacts upon a spring loading piston of larger area which, when moved through its full stroke, brings the spring load up to the designed maximum limit. The rate of travel of this piston is regulated by a dashpot.

3,771,556
ONE WAY CHECK VALVE
Robert T. Gifford, Yellow Springs, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio
Filed Dec. 27, 1971, Ser. No. 212,410
Int. Cl. F16k *15/04*
U.S. Cl. 137—533.11 **10 Claims**



A one way check valve in which the valve cage is formed from a single piece of elastic material and a relatively rigid ball valve is installed in the valve cage by distorting the cage and forcing the ball through the inlet opening into the cage. The outlet of the valve is divided into a series of outlet passages by intersecting, tapered web members which positively prevent the loss of the ball valve from the interior of the valve cage and at the same time maintain the ball valve centrally of the valve body for rapid seating of the ball under reverse flow conditions.

3,771,557
RESERVOIR FOR A LIQUID PUMP, INCLUDING A FLOAT VALVE
Michel A. Moret, and Pierre J. Jousson, both of Geneva, Switzerland, assignors to Institut de Recherche Woog, Geneva, Switzerland
Filed Feb. 16, 1972, Ser. No. 226,826
Claims priority, application Switzerland, Mar. 19, 1971, 4106/71
Int. Cl. A61k *7/00, 9/00;* A46b *13/06*
U.S. Cl. 137—565 **10 Claims**



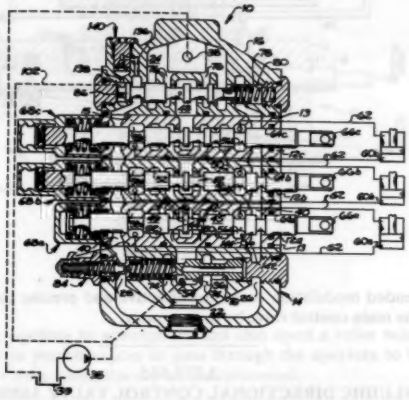
Apparatus for supplying liquid to a pump includes a pump inlet fixture and a removable reservoir. The reservoir has a chamber at the bottom thereof with an inlet from the portion of the reservoir thereabove, and an outlet. A closure member closes the outlet when the reservoir is removed from the fixture for filling, and a float in the chamber closes the inlet in the raised position thereof. The chamber outlet and the pump inlet fixture are designed so that the fixture opens the closure member and moves a substantial distance into the chamber as the reservoir is placed in position on the fixture. With liquid in the reservoir, the chamber inlet is closed by the float when the reservoir is placed in position, and a portion of the liquid in the chamber is forced into the pump inlet.

3,771,558

COMBINED OPEN-CENTER PRESSURE CONTROL AND REGENERATION VALVE

Roger H. Ailshie, Lewis, Kans., assignor to Cross Manufacturing, Inc., Lewis, Kans.

Filed July 20, 1972, Ser. No. 273,362
Int. Cl. F15b *11/16*
U.S. Cl. 137—596.13 10 Claims



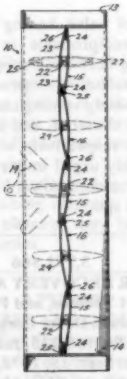
A pressure responsive flow restricting valve in an end section of an open-center sectional control valve assembly maintains a constant pressure differential on the control spools across the open-center flow passages in the assembly. The flow restricting valve is shiftable to a regenerative position blocking exhaust flow from the assembly whenever inlet pressure drops below a predetermined level to permit regeneration of the exhaust flow to supplement inlet flow to the assembly.

3,771,559

DAMPER

Raymond L. Alley, Toledo, Ohio, assignor to The American Warming & Ventilating, Inc., Toledo, Ohio

Filed Apr. 10, 1972, Ser. No. 242,643
Int. Cl. F16k *13/00*
U.S. Cl. 137—601 3 Claims



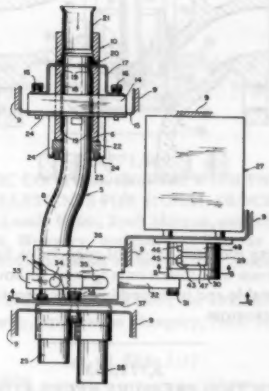
A damper for controlling the flow of gases through an opening. The damper has a rectangular frame which defines the opening and a plurality of blades rotatably mounted in the frame by parallel spaced axes. The blades are operatively connected through the axes to be rotated together to close off, to open, or to partly close the opening defined by the frame. All of the blades have air-foil cross-sections of substantially identical shape. Alternate blades have resilient noses and tails which act as gaskets in contacting the respective solid tails and noses of intermediate blades and in contacting members of the frame which extend parallel to the axes of the blades, when the damper blades are in closed position.

3,771,560

ICE DIVERTER VALVE AND CONTROL SYSTEM THEREFOR

Robert F. Conti; James D. Donham, and Michael P. Gosnell, all of Easton, Pa., assignors to Follett Corporation, Easton, Pa.

Filed Apr. 21, 1972, Ser. No. 246,476
Int. Cl. F16k *11/14*
U.S. Cl. 137—609 5 Claims



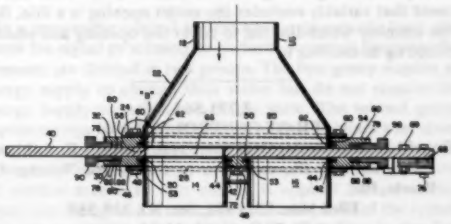
This invention is directed to a positively driven oscillating valve for directing the flow of diced ice from a single ice making machine to either of two receivers, and includes an S-shaped transfer tube that is cantileverally and oscillatably supported at its ice-receiving end and has its opposite free end operatively connected to positive motor driven means to oscillate the free end from one discharge outlet to another. Electrical controls are provided to cause the valve to be operated on a selective priority demand basis with respect to the two receivers.

3,771,561

VALVE

James V. Santamaria, Jr., 1224 Wisteria Dr., R.D. No. 1, Malvern, Pa.

Filed Mar. 14, 1972, Ser. No. 234,506
Int. Cl. F16k *11/14*
U.S. Cl. 137—610 7 Claims



A valve is provided for use in a conduit system at the juncture of a main conduit section with a pair of conduit sections

branching therefrom. The valve is provided with a movable valve part operable for switching material drawn through said system back and forth selectively between said branches.

3,771,562

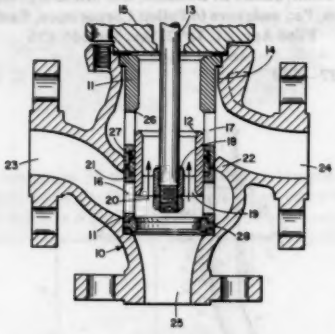
THREE WAY CONTROL VALVE

John R. Curran, Attleboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 42,426, June 1, 1970, Pat. No. 3,648,718. This application Jan. 6, 1972, Ser. No. 215,788

Int. Cl. F16k *11/00*

U.S. Cl. 137—625.4 **9 Claims**



A three way industrial control cage valve suitable for both flow divergence and flow convergence without modification that is both stable and balanced in either direction for use with pneumatic actuators.

3,771,563

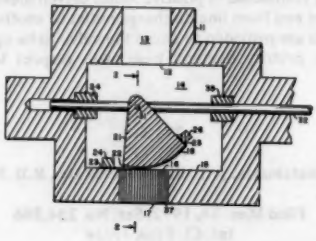
LOW FRICTION PRESSURE REGULATING VALVE

Paul F. Hayner, Lexington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed May 15, 1972, Ser. No. 253,088

Int. Cl. F16k *7/18*

U.S. Cl. 137—625.28 **1 Claim**



A pressure regulating valve is described in which the element that variably occludes the outlet opening is a thin, flexible member which lies flat to cover the opening and which is rolled up to uncover it.

3,771,564

PILOT CONTROL VALVE

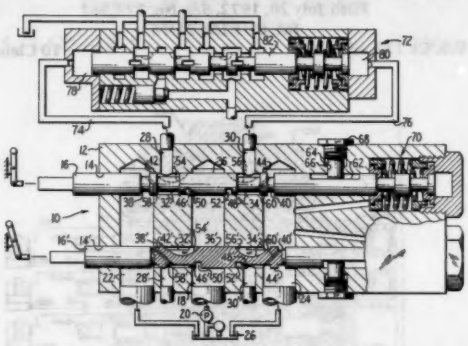
Donald L. Bianchetta, Coal City, and Kenneth R. Lohbauer, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 23, 1972, Ser. No. 237,255

Int. Cl. F16k *31/12, 31/36, 31/14*

U.S. Cl. 137—625.63 **6 Claims**

There is disclosed a pilot valve for operation of a main control valve wherein the pilot valve is provided with throttling means to modulate the control fluid to effect an accelerated actuation of the main control valve and to provide an extended modulation range for effective and precise control of the main control valve by the operator.



3,771,565

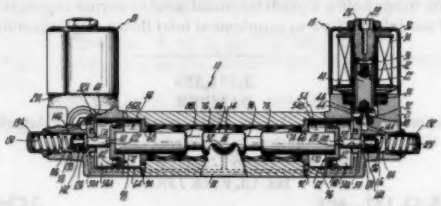
FLUIDIC DIRECTIONAL CONTROL VALVE ASSEMBLY

Lawrence Dominic Padula, New Britain, Conn., assignor to Skinner Precision Industries, Inc., New Britain, Conn.

Filed Nov. 6, 1972, Ser. No. 304,213

Int. Cl. F16r *11/07*

U.S. Cl. 137—625.64 **11 Claims**



Directional control valve having a ported body with a chamber, a spool reciprocable in the chamber, a flow passageway extending between a supply port and each end of the spool chamber, selectively operable valves in each flow passageway for alternately venting and pressurizing its respective end of the spool chamber, and a pair of spool balancing members engageable respectively with opposite ends of the spool and continuously urged under a biasing force of fluid under supply line pressure toward engagement with their respective ends of the spool.

3,771,566

VAPOR RECOVERY ADAPTER

Jack A. McMath, Fort Thomas, and Fred A. Wilson, Florence, both of Ky., assignors to Dover Corporation, New York, N.Y.

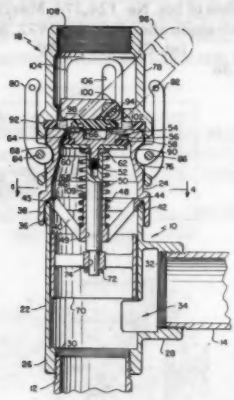
Continuation of Ser. No. 165,233, July 22, 1971, abandoned. This application Sept. 25, 1972, Ser. No. 291,802

Int. Cl. F16k *11/14*

U.S. Cl. 137—625.49 **20 Claims**

A vapor recovery adaptor for preventing vapor escape to atmosphere under certain conditions is disclosed. The adaptor provides for the normal venting of the vapors to atmosphere under normal conditions. When it is desired to recover the

vapors and prevent vapor escape to atmosphere, a coupler is attached to the adaptor. The coupler urges a piston to close



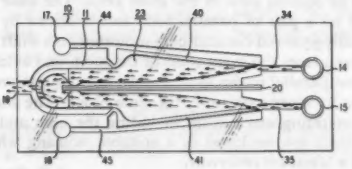
off the opening to atmosphere and also open a valve subassembly to permit vapors to pass through the aperture to the coupler from which the vapors are recovered.

3,771,567

ELECTROMECHANICALLY ACTUATED FLUID SWITCH

Richard Eugene Linden, Reynoldsburg, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 13, 1972, Ser. No. 271,382
Int. Cl. F15c *3/08*
U.S. Cl. 137—625.44 **1 Claim**



An electromechanically actuated fluid switch is disclosed in which the fluid output condition is tristable. The fluid output condition is selected by placing a voltage on a piezoelectric strip which, in turn, controls the position of the switching element. The three distinct fluid output conditions correspond to applied electrical signals of "+," "−" and "0." Since the switching function is not performed by the piezoelectric strip, but by a separate switching element, the configuration and surface finish of that element may be selected to provide desired fluid flow properties.

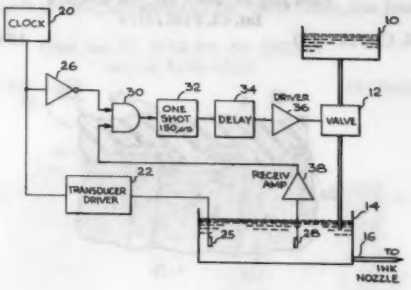
3,771,568

INK ANALYZER AND COMPENSATOR

Vincent E. Bischoff, River Grove, and Robert I. Keur, Niles, both of Ill., assignors to A. B. Dick Company, Chicago, Ill.

Filed Dec. 6, 1972, Ser. No. 312,667
Int. Cl. F15c *1/04*
U.S. Cl. 137—805 **8 Claims**

In an ink drop writing system a vibrating nozzle forms drops, which are thereafter deflected electrostatically, whereby characters or waveforms are written on paper by the deflected drops. The fluid resonance of the ink must be considered in the design of the nozzle if good drop formation and printing is



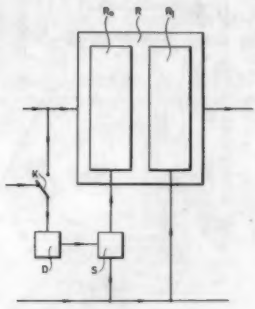
to be obtained. This invention maintains a desired fluid resonance by compensating for the effects of evaporation on fluid resonance.

3,771,569

PNEUMATIC CONTROL SYSTEM WITH PNEUMATIC LOGIC ELEMENTS FOR SIGNAL PROCESSING

Andor Boros; Laszlo Helm; Zsolt Marton, and Attila Szucs, all of Budapest, Hungary, assignors to Magyar Tudomanyos Akademia Automatizalasi Kutato Intezet, Budapest, Hungary

Filed Nov. 8, 1971, Ser. No. 196,345
Claims priority, application Hungary, Nov. 20, 1970, MA-2168
Int. Cl. F15c *1/12*
U.S. Cl. 137—816 **2 Claims**



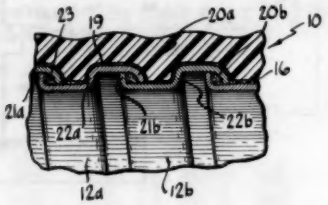
In a pneumatic control system having pneumatic logic elements for signal processing to perform a control function, the elements are divided in two groups. The first group require an energy supply to change their states but do not require the energy supply to maintain a stable state. The second group require energy both to change state and to maintain a set state. The second group are connected directly to a pneumatic energy source while the first group are connected through an on-off control means so that energy is applied thereto during signal processing and is removed in a stable state of the system so as to avoid unnecessary energy consumption in the first group. The control means may be actuated to allow energy supply to the first group by a device responsive to incoming signals for processing by the system.

3,771,570

FLEXIBLE CONDUIT

Neil Coleman, Highland Park, Ill., assignor to Coleman Cable & Wire Co., River Grove, Ill.

Filed July 20, 1967, Ser. No. 654,879
Int. Cl. F16l 11/14
U.S. Cl. 138—131 **15 Claims**



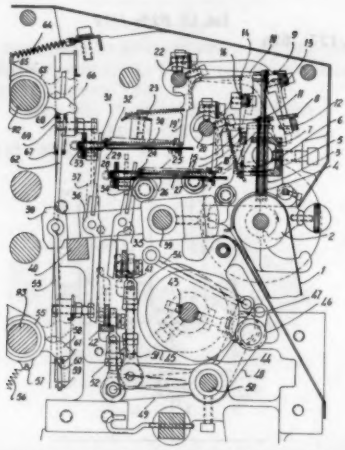
A jacketed flexible convoluted metal hose construction has an intermediate layer bonded to the metal hose and to an extruded plastic jacket. The hose convolutions are extended from their most compressed condition so that relatively wide spacings are maintained therebetween, and displacement between the hose and the jacket on flexure of the conduit is prevented.

3,771,571

SYNCHRONIZED READING DEVICES FOR LOOMS

Sergio Serra Xaus, Calle Legalidad No. 13, Barcelona, Spain

Filed Apr. 7, 1972, Ser. No. 242,018
Claims priority, application Spain, Aug. 23, 1971, 394 447
Int. Cl. D03c 1/14
U.S. Cl. 139—68 **5 Claims**



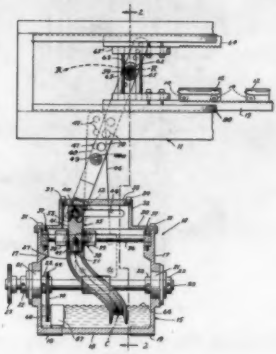
An improved synchronized reading device for a loom, particularly a dobby machine, for reading a pattern having at least two rows of perforations thereon disposed according to a predetermined design. The reading device includes a set of four feeler needles disposed in parallel groups of two with each group positioned for coaction with one of the rows of perforations formed in the pattern. Each feeler needle is supported on a cranked lever pivotally supported on a transverse shaft which extends longitudinally of the dobby machine. Each lever is also articulated to a substantially horizontally extending needle which in turn controls a vertical oscillatory lever. A pair of said oscillatory levers corresponding to the needles of each group are pivotally supported on a lever arm, with adjacent pairs of lever arms being pivotally connected to tie rods which are connected to retaining hooks for controlling the rocker of the dobby machine.

3,771,572

SHUTTLE-MOTION UNIT FOR NARROW FABRIC LOOMS

Alexander Gross, 1201 Chelton Ave., Philadelphia, Pa.

Continuation of Ser. No. 124,274, March 15, 1971, abandoned. This application Nov. 20, 1972, Ser. No. 308,179
Int. Cl. D03d 35/00
U.S. Cl. 139—136 **24 Claims**



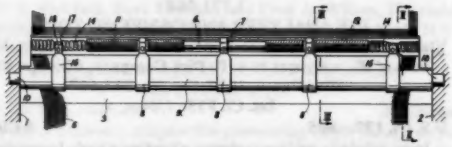
A shuttle-motion unit for use in combination with a narrow fabric loom wherein a shuttle race, one or more shuttles carried by the race, and positive shuttle-actuating mechanism adapted to reciprocate the shuttles through the warp sheds are associated with the batten. The unit includes a pair of spaced lever arms mounted for conjoint rocking movement in the direction of the desired reciprocatory movement of the shuttles. A rod connecting the arms adjacent their outer ends supports a peripherally grooved sleeve in rotational and sliding engagement with the rod. A pair of vertically extending rods carried by the shuttle-actuating mechanism embrace the sleeve therebetween. Rocking movement is imparted to both lever arms by a reciprocatory slide block having pintles received in bearing slots in the lever arms. The slide block is mounted on a pair of parallel rods and is driven by a single peripherally grooved circular cam mounted on a shaft adapted to be driven from the main shaft of the loom and extending in a direction parallel to the spaced rods, the cam groove receiving a cam follower carried by the slide block. The slide block and its operating mechanism including the cam and its supporting shaft are enclosed in a suitable housing which also serves as a lubricant reservoir.

3,771,573

FABRIC EXPANDING DEVICE FOR WEAVING MACHINES

Vladimir Horn, Brno; Vladimir Kuda, Blazovice, and Jindrich Cerny, Brno, all of Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho Strojirenstvi, Brno, Switzerland

Filed May 8, 1972, Ser. No. 251,172
Claims priority, application Czechoslovakia, May 7, 1971, 713324
Int. Cl. D03j 1/22
U.S. Cl. 139—294 **5 Claims**



A device for expanding fabrics on weaving machines. The device comprises an expanding rod which partially extends

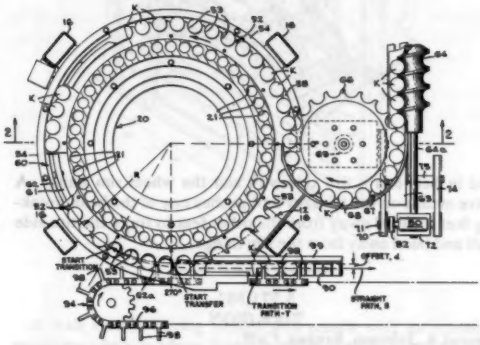
into a groove provided in a bar which spans the side frames of the weaving machine. The expanding rod is held in its position by means of a system of arms and brackets attached to a supporting bar which is adjustably mounted above the bar. Nearer to its center the rod is provided with threads of opposite hand whereas at its ends it is provided with rotatable pinned fabric engaging rings mounted on rotatably adjustable bushings.

3,771,574

TRANSITION PATH FOR FILLING MACHINE

Sherman H. Creed, San Jose; John R. Huber, Los Gatos, and Johan Hendriks, San Jose, all of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Dec. 16, 1971, Ser. No. 208,598
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—1 **14 Claims**



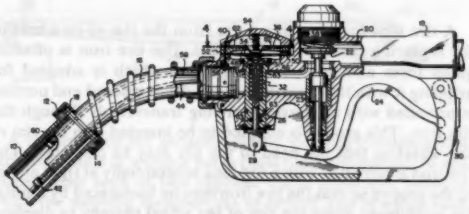
This invention relates to filling of open top containers, such as cans, on rotary fillers and more specifically to what will be termed an improved transition path between the rotary path of the filler and a straight line discharge path for the filled containers. Both a constant curvature decrease spiral and a parabolic type curve are disclosed.

3,771,575

AUTOMATIC FUEL DISPENSING NOZZLE

Edward A. Mayer, Newburgh, N.Y., assignor to Texaco, Inc., New York, N.Y.

Filed Oct. 4, 1971, Ser. No. 185,998
Int. Cl. B67d *5/04, 5/377;* F16k *31/145*
U.S. Cl. 141—128 **4 Claims**



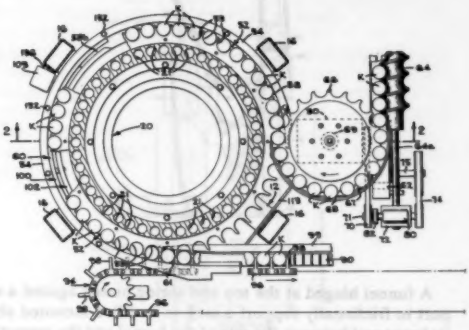
A valved fuel dispensing nozzle with a lockout plunger which is unlocked to release the valve in response to the action of a vacuum signal on a diaphragm, resulting from the rise of fluid about the spout wherein a second diaphragm is also connected to unlock the lockout plunger in response to a predetermined rise of pressure within the fuel tank.

3,771,576

AUTOMATIC BANKING FOR ROTARY FILLING MACHINE

Robert K. Gellatly, Los Gatos, and Sherman H. Creed, San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Jan. 17, 1972, Ser. No. 218,111
Int. Cl. B65b *43/60*
U.S. Cl. 141—150 **15 Claims**



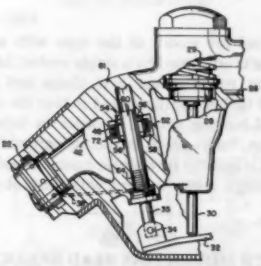
A rotary filling machine in a generally circular track around which the open top containers are advanced during filling. The track includes inner and outer rails, the outer rails being automatically raised and lowered for increasing and decreasing the banking action on the cans in accordance with the speed of rotation of the filler. This accommodates utilization of a greater degree of banking than would be possible without the use of the automatic banking feature and prevents spillage when the machine is not running, which spillage would otherwise occur with the high degree of banking employed. Both tachometer and a pneumatic throttle valve speed control system for changing the banking are disclosed.

3,771,577

AUTOMATIC FUEL DISPENSING NOZZLE

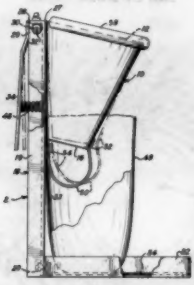
Edward A. Mayer, Newburgh, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,134
Int. Cl. B67d *5/04, 5/377;* F16k *31/44*
U.S. Cl. 141—209 **4 Claims**



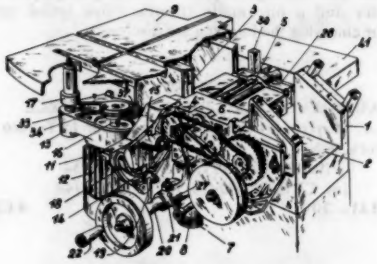
An automatic dispensing nozzle for filling a vehicle fuel tank having a control valve automatically responsive to both the rise of fluid about the outlet spout of the nozzle and also to abnormal increase in pressure within the fuel tank, to release a lockout mechanism which causes the valve to close, and involves a laterally movable locking member which is shifted laterally to release said lockout mechanism in response to the aforesaid conditions.

3,771,578
SAMPLE SACKING FUNNEL
Kenneth O. Huff, 275 Townsend Bldg., Casper, Wyo.
Filed Mar. 3, 1971, Ser. No. 120,456
Int. Cl. B65b *1/06, 3/06;* **B67c** *11/00*
U.S. Cl. 141—314 **8 Claims**



A funnel hinged at the top and spring biased against a support to frictionally support a sack to be filled mounted about its lower end between the side of the funnel and the support.

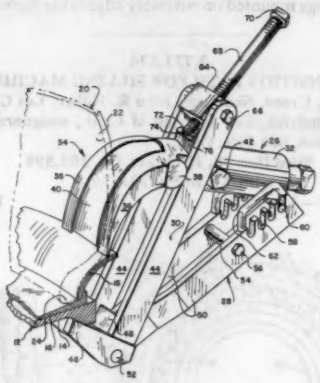
3,771,579
UNIVERSAL WOOD WORKING MACHINE
Maurice Paul Heuze, 2, rue de Saint Front, Domfront, France
Filed Nov. 22, 1971, Ser. No. 201,033
Claims priority, application France, Dec. 4, 1970, 7043671
Int. Cl. B27c *9/04*
U.S. Cl. 144—1 C **8 Claims**



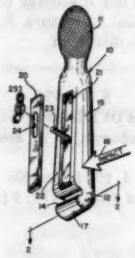
A machine-tool for wood, of the type with a plurality of tool-holding shafts entrained by a single motor, and which can plane, square up, rough -plane, saw, shape and mortise, and has two parallel tables, characterized in that the displacement of the two tool-holding shafts, in order to bring them into working position, takes place in planes perpendicular to the said tables, and is insured by a single control, said shafts being entrained by a single motor integral with the mobile frame.

3,771,580
EARTH MOVER TIRE BEAD BREAKER
Charles Earl Branick, 1601 S. 9th St., Fargo, N. Dak.
Filed Aug. 21, 1972, Ser. No. 282,114
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.17 **14 Claims**

Apparatus includes elongate breaker unit having bead breaking feet at one end and pivot mounting at other end. A compression link is pivoted at its aft end to the pivot mounting. A clamp link and an intermediate portion slidably crossing an intermediate portion of the breaker unit to form a triangular linkage. An anchor foot extends from the first end of the clamp link to engage a wheel rim inner face, and extensible means connected to the second end of the clamp link forcibly engages the breaker unit to shorten the base of the triangle and drive the bead breaking feet toward the anchor foot and in between a tire side wall and the wheel rim flange. A drive means on the breaker unit pushes one of the bead breaking feet forward away from the other feet to force the tire side wall and bead away from the rim flange.



3,771,581
TIRE IRON
George A. Johnson, Saugus, Calif.
Filed June 30, 1972, Ser. No. 267,890
Int. Cl. B60c *25/00*
U.S. Cl. 157—1.22 **2 Claims**



A tire iron for removing a tire from the rim of its wheel or for replacing the tire on the wheel. The tire iron is of elongated form and has one end portion which is adapted for gripping it with the hand of the user. The opposed end portion is provided with a groove extending transversely through the tire iron. This groove is adapted to be inserted into the rim of the wheel so that the bead of the tire may be displaced. The tire iron is provided with a flat face substantially at right angles to the groove so that the tire iron may be hammered by a suitable instrument along the rim of the wheel thereby to displace the bead of the tire to release the tire. The tire iron may also be provided with an element which is slidable over the groove. It may be locked to the tire iron in either its retracted or extended position thereby to facilitate guiding of the tire iron over the rim of the wheel. The tire iron preferably consists of a non-scratching metal such, for example, as aluminum or it may be coated with or have an insert of a nonscratching, "self lubricating" plastic, such as Teflon.

3,771,582

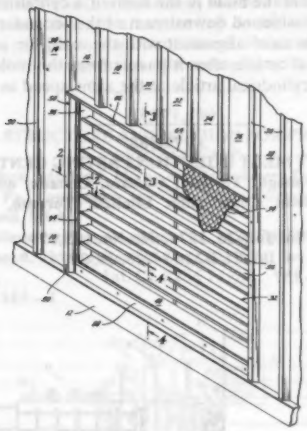
SELF-FLASHING LOUVER

Roy C. Hairston, P.O. Box 36302, 5710 Clarewood, Houston, Tex.

Continuation of Ser. No. 69,728, April 9, 1970. This application Feb. 18, 1972, Ser. No. 227,680

Int. Cl. E06b 9/04

U.S. Cl. 160—89 4 Claims



A wall system having ribbed wall panels with an opening receiving a louver whose frame is made of sheet metal formed with integral flashing which fits against the wall panels in such a way that no additional flashing is needed, the louver being recessed in the wall so that the adjustable blades are inside and are covered on the outside with a screen.

3,771,583

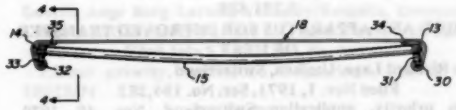
FURNITURE CONSTRUCTION

Donald L. Bottemiller, Wadena, Minn., assignor to Homecrest Company, Wadena, Minn.

Filed Sept. 20, 1971, Ser. No. 181,985

Int. Cl. A47c 5/06, 7/00

U.S. Cl. 160—327 2 Claims



A construction for securing plastic webbing members to a furniture frame in which a bar is rigidly secured parallel to and spaced from each of two opposed frame members, between which the webbing members are to extend, and in which each end of the webbing is passed over one of the frame members, then over the bar, and then back over the frame member over the initial end portion. The plastic webbing is of a type which when it is heating will stretch and upon cooling will return to its original length. The initial end portion of the webbing may be adhesively secured to the frame member and/or the overlying section of the webbing member to guard further against any possible slippage between the webbing and the frame.

3,771,584

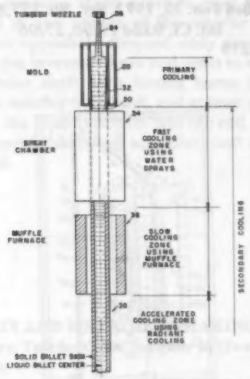
METHOD FOR CONTINUOUSLY CASTING STEEL BILLET STRANDS TO MINIMIZE THE POROSITY AND CHEMICAL SEGREGATION ALONG THE CENTER LINE OF THE STRAND

Witold M. Wojcik, Fredonia, N.Y., assignor to Roblin Industries, Inc., Buffalo, N.Y.

Filed Jan. 8, 1971, Ser. No. 104,954

Int. Cl. B22d 11/12

U.S. Cl. 164—89 22 Claims



Porosity and chemical segregation along the center line of a continuously cast steel billet strand are minimized by controlling the cooling and solidification of the continuously cast strand in such fashion that the central region solidifies in a vertical freezing mode. The transverse freezing which proceeds from the skin inward is retarded until such time as the temperature of the molten central region favors vertical solidification, whereafter the billet strand is further cooled to allow completion of its solidification in the vertical mode.

3,771,585

DEVICE FOR MELTING SPONGE METAL USING INERT GAS PLASMAS

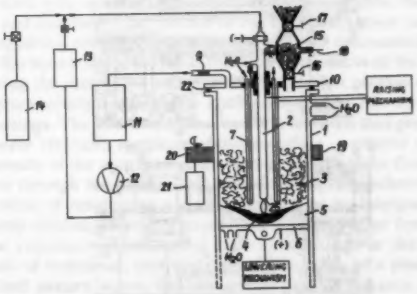
Klaus-Herbert Ulrich, Essen, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Mar. 6, 1972, Ser. No. 231,824

Claims priority, application Germany, Mar. 4, 1971, P 21 10 274.9

Int. Cl. B22d 27/02

U.S. Cl. 164—252 7 Claims



A device for melting sponge metal and especially suitable for melting sponge metals of Groups 4b and 5b of the periodic system, including a hermetically sealed, cooled mold, a transferred-arc noble gas plasma burner providing a vertical plasma

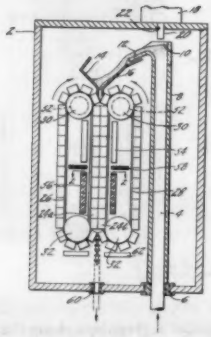
for acting on sponge metal piled in the mold, and an insulating jacket surrounding the burner and screening the plasma from sponge metal situated laterally to the plasma, so that the plasma may be confined substantially completely to a direction of steepest potential gradient.

3,771,586

APPARATUS FOR CONTINUOUS CASTING OF DIRECTIONALLY SOLIDIFIED ARTICLES

Dana B. Waring, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 22, 1972, Ser. No. 227,837
Int. Cl. B22d *11/06, 25/06*
U.S. Cl. 164—279 **12 Claims**



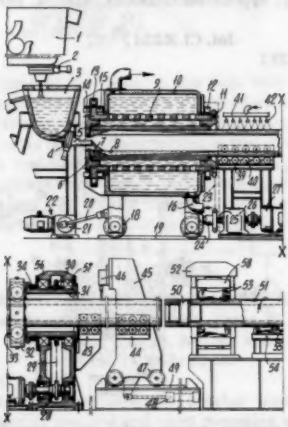
Apparatus for continuous casting of directionally solidified articles in which the cooperating mold elements are heated, moved into cooperating relation to one another, filled and cooled for solidifying the alloy after which the mold elements are separated for removal of the cast alloy from the mold.

3,771,587

CONTINUOUS CENTRIFUGAL CASTING APPARATUS FOR HOLLOW SHAPES

Michael Poran, New York, N.Y., assignor to Officine Meccaniche Danieli, Udine, Italy

Filed Oct. 1, 1971, Ser. No. 185,691
Claims priority, application Italy, Mar. 2, 1941, 21228 A/71
Int. Cl. B22d *11/12*
U.S. Cl. 164—282 **16 Claims**



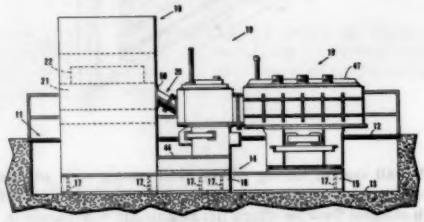
An apparatus for the continous centrifugal casting of a cylindrical article including a mold rotatable about a generally horizontal axis; means for feeding molten metal into the mold; means for rotating the mold to centrifugally form a cylindrical article therein; a mold housing surrounding the mold over substantially its entire length; means for supplying cooling liquid to the mold housing so that said molten metal is progressively solidified along the entire length of the mold; means to oscillate the mold and the mold housing along the axis of rotation of the mold; secondary cooling means located downstream of the mold and adapted to complete the solidification of the molten metal; means to withdraw the solidified metal from the mold in the form of a cylindrical article, and means positioned downstream of the secondary cooling means and in axial alignment with the mold for supporting the cylindrical article after it passes from the mold and for rotating the cylindrical article at the same speed as the mold is rotated.

3,771,588

DIRECT MELT INJECTION CASTING CENTRE

John R. Cavanagh, Toronto, Ontario, Canada, assignor to Logic Systems Corporation Limited, Toronto, Ontario, Canada

Filed July 26, 1971, Ser. No. 165,979
Int. Cl. B22d *17/26, 39/00*
U.S. Cl. 164—337 **5 Claims**



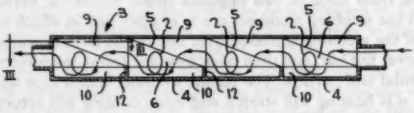
The disclosure sets forth a continuous process and casting centre for the controlled atmosphere melting and direct low pressure injection of metal into massive metal dies at cyclic rates of continuous melting and casting controlled by heat sink properties of the dies to provide pure casting metal in the product formed. Metal injection is accomplished at a single point at a peripheral edge of the product being formed to enable heavy casting especially of aluminum alloy to be formed in thicknesses greater than one-eighth of an inch and of weights greater than 15 pounds for the cyclic production of structural quality aluminum products and sections generally characterised by one thickness portion of at least one inch and a weight greater than 50 pounds and at a rate of between 10 and 20 castings per hour. The injection nozzle and dies are not separated mechanically but excess melt is released from the dies by a gas bubble.

3,771,589

METHOD AND APPARATUS FOR IMPROVED TRANSFER OF HEAT

James Richard Lage, Umiken, Switzerland

Filed Nov. 1, 1971, Ser. No. 194,282
Claims priority, application Switzerland, Nov. 10, 1970, 016708/70
Int. Cl. F28f *13/12*
U.S. Cl. 165—1 **19 Claims**



Disclosed are a method for improving the heat transfer characteristics of a heat exchanger and a heat exchanger

structure capable of operating in accordance with the method. The disclosed method comprises causing a heat exchange medium to flow alternately through two different types of zones. In the first zone the flow patterns developed in the fluid are generally translatory while in the second zone the patterns are generally rotational. The heat exchange fluid is caused to flow at least partly across the heat exchange surface while in the second zone. In the apparatus, the zones are presented as compartments divided by a wall, one of the compartments being at least partially bounded by the heat exchange surface. The medium flows in a translatory manner through one compartment and through a conducting device which interconnects the compartments. A rotational movement is imparted on the fluid flowing into the other compartment.

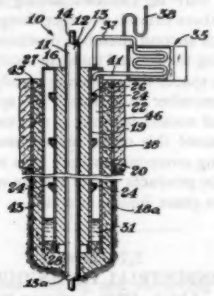
3,771,590
WELL STRUCTURE AND METHOD FOR PROTECTING PERMAFROST

John S. Best, Midland, Mich., and John Larry Duda, State College, Pa., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 112,634, Feb. 4, 1971, abandoned. This application Dec. 20, 1971, Ser. No. 210,037

Int. Cl. F28d *15/00*

U.S. Cl. 165—1 **5 Claims**



Permafrost about a bore, such as an oil well is protected by surrounding the casing of the well with an insulating layer, surrounding the insulating layer with a hollow jacket, the jacket containing liquid boiling below the freezing point of the permafrost. The boiling liquid being condensed adjacent the upper portion of the jacket and the liquid returned downwardly in the jacket.

3,771,591
METHOD AND DEVICE FOR REGULATING THE TEMPERATURE OF ROTATING GRINDING ROLLS HAVING A HOLLOW INTERIOR

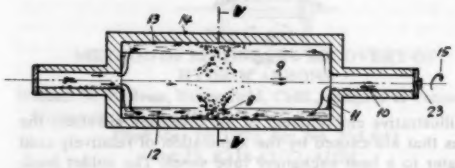
Laurits Aage Berg Larsen, Veddelev/Roskilde, Denmark, assignor to Gebrueder Buehler AG, St. Gallen, Switzerland

Filed July 5, 1972, Ser. No. 269,093

Claims priority, application Switzerland, July 8, 1971, 10023/71

Int. Cl. B02c *4/44*

U.S. Cl. 165—1 **12 Claims**



The hollow interior of the rolls contains heat equalizing media which can have both a liquid phase and a vapor phase, the hollow interior being only partly filled with the medium in the liquid phase. During operation, locally undefined heat concentrations of the roll, on the inner surface of the roll, are reduced by evaporation of the liquid heat equalizing medium, and the heat content of the resultant vapor is transmitted to points of the roll whose instantaneous temperature is lower than the mean operating temperature of the roll, by condensation of the vapor at these points. The condensation or evaporation temperature of the heat equalizing media is beween the maximum and minimum operating temperatures at the static operating pressure prevailing in the interior of the rolls, and the absolute static pressure may be varied. The media, present in two phases of the interior of the roll, is excited into two oppositely directed eddy currents. Grinding rolls used with the invention have end walls to which there are connected tubular shaft ends having bores communicating with the hollow interior of the roll, and at least one shaft end is used for filling the liquid medium into the roll. A flow restriction may be provided between a tubular shaft end and the interior of the roll.

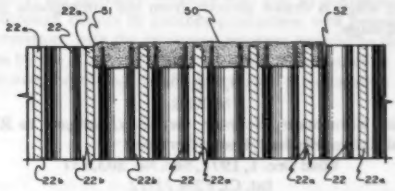
3,771,592
MATRIX AND METHOD OF MAKING SAME

James A. Sayers, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 16, 1971, Ser. No. 171,881

Int. Cl. F28d *19/04*

U.S. Cl. 165—10 **9 Claims**



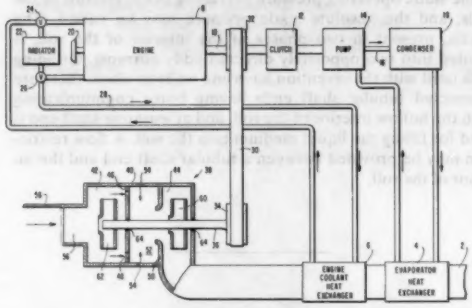
Disclosed is an improved assembly or matrix in which a plurality of open-ended, glass-ceramic tubes are disposed in axially parallel relation. The tubes are rigidified into a matrix structure, with the tubes being integrally bound to each other at their tube contact areas. Additional glass-ceramic material at and just below the surface of the matrix structure and arranged in a predetermined pattern across the open-ended face of the matrix integrally binds together the surfaces of the tubes facing the interstices between the tubes. That portion of the pattern overlying the open ends of the tubes fills the tube openings. The additional glass-ceramic material thus provides a wear resistant, matrix-reinforcing surface, a control of the porosity of the matrix structure, and a control of the flow pattern through the matrix. The invention also comprehends the method of reinforcing a matrix of this type by interposing a finely divided, thermally crystallizable frit or other forms of low expansion crystallizable glass between and in the open ends of individual, matrix-defining glass tubes in a predetermined pattern across the open-ended face of a matrix structure and thermally processing the frit or other form of crystallizable glass to convert the frit or other material to low-expansion, glass-ceramic material of substantially the same thermal expansion characteristics as the matrix structure and to fusion bond the frit or other material to the matrix structure.

3,771,593

AIR SUPPLY DEVICE FOR AIR HEATING AND COOLING SYSTEM

Wilson C. Shepheard, Virginia Beach, Va., assignor to Air-A-Plane Corporation, Norfolk, Va.

Division of Ser. No. 79,930, Oct. 12, 1970, Pat. No. 3,698,831.
This application July 31, 1972, Ser. No. 276,467
Int. Cl. B60h 3/04
U.S. Cl. 165—43 3 Claims



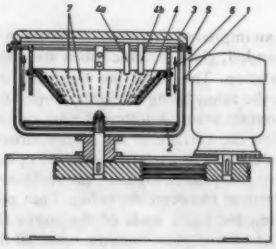
A two-stage blower is driven by a liquid-cooled engine. The first stage of the blower operates in a chamber divided from an intake plenum for the second stage by an orifice plate. For heating, a starvation damper for the first stage chamber is opened, heat is added to the air and its potential energy is reduced to substantially zero by the orifices which the air passes through to the second stage. For cooling, the starvation damper is closed, the first stage runs idle, and intake air for the second stage is drawn directly from the atmosphere to the second stage.

3,771,594

MIXER

Joachim Bornemann, Veilmar, Germany, assignor to Rheinstahl Aktiengellschaft, Essen, Germany

Filed Dec. 1, 1971, Ser. No. 203,637
Int. Cl. F28f 13/12
U.S. Cl. 165—109 4 Claims



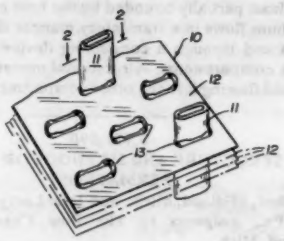
A mixer adapted to be heated and cooled, especially for use in connection with the preparation and refining of synthetic materials, which comprises a double-walled container having coaxially arranged therein a truncated cone-shaped insert open at the top and bottom and in spaced relationship to the inside of the container while the smallest diameter of the insert is closest to the bottom, the insert being double-walled so as to define passage means for passage therethrough of a cooling or heating medium and also being adjustable as to the spacing of the insert relative to the container bottom.

3,771,595

HEAT EXCHANGE DEVICE

Raymond S. Slaasted, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed Sept. 22, 1971, Ser. No. 182,722
Int. Cl. F28d 9/18
U.S. Cl. 165—151 4 Claims



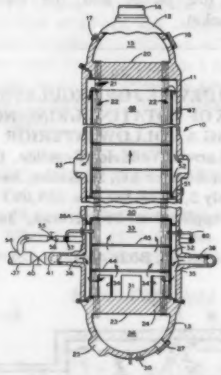
A heat exchange device comprising a heat conducting elongated first member such as a plurality of tubes, a plurality of spaced heat conducting primarily two dimensional second members which may be flat fins having openings through which these members extend, a spacer flange at each opening integral with each second member positioned against a first member for joining the fin and thus the second member to the first member, the spacer flange having an edge bearing against another second member to maintain the spaced relationship therebetween and means forming a recessed section in the flange edge adjacent this other second member to provide space for a joining composition such as a solder and for the escape of reaction products of the joining operation whether these products are gases, liquids or solids.

3,771,596

INDUSTRIAL TECHNIQUE

John Schlichting, Akron, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Oct. 27, 1971, Ser. No. 193,108
Int. Cl. F28f 9/02
U.S. Cl. 165—158 1 Claim



An illustrative embodiment of the invention alleviates the stresses that are caused by the application of relatively cold feedwater to a heat exchanger tube sheet. The colder feedwater that characterizes a low load condition in a nuclear power plant is admitted to the heat exchanger riser chamber that is adjacent to the primary coolant outlet head tube sheet by way of an inlet bypass system. The bypass prevents the

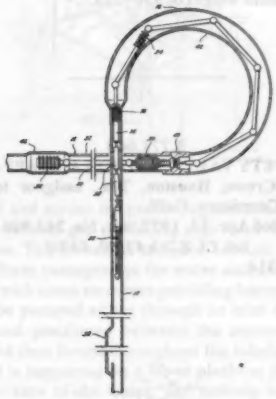
thermal shock that otherwise would have resulted from the exposure of the tube sheet on the one side to cold inlet feedwater and, on the other side, to a very hot primary coolant. As the feedwater temperature increases with the power plant load and approaches the primary coolant outlet temperature, the bypass system is turned off. The main feedwater inlet nozzle then discharges into the heat exchanger in an essentially direct fluid communication with the tube sheet.

3,771,597

FLUID SYSTEM FOR MOVING SUBSURFACE WELL EQUIPMENT IN WELL TUBING

Harold E. McGowen, Jr., Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Sept. 11, 1972, Ser. No. 287,692
Int. Cl. E21b *23/00, 23/04, 43/10*
U.S. Cl. 166—77 **7 Claims**



A fluid system for running and retrieving subsurface well equipment in a well tubing by fluid flow through an upper entrance tubing. The upper entrance tubing includes curved portions and includes first and second conduits of different sizes. Both of the conduits have an inside diameter greater than the inside diameter of the well tubing with the first size conduit being larger than the second size conduit and being positioned in the upper tubing at curved portions of the upper tubing to allow passage of lengthy well equipment through the upper entrance tubing. First and second locomotives having an outside diameter substantially equal to the inside diameter of the second size conduit, and a third locomotive having an outside diameter substantially equal to the inside diameter of the well tubing and releasably connected to the other locomotives for being carried to and moved in the well tubing in response to fluid flow. The locomotives being spaced from each other whereby one of the locomotives will always be in a conduit of a size corresponding to the one locomotive to provide movement of the locomotives by fluid through the tubing. The first size conduit including elbows with the first and second locomotives spaced from each other a distance greater than the axial extent of said elbows.

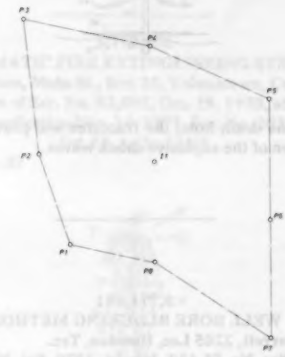
3,771,598

METHOD OF SECONDARY RECOVERY OF HYDROCARBONS

William N. McBean, Bakersfield, Calif., assignor to Tenneco Oil Company, Houston, Tex.

Filed May 19, 1972, Ser. No. 255,043
Int. Cl. E21b *43/22, 43/24*
U.S. Cl. 166—268 **4 Claims**

A method of producing hydrocarbons from a subterranean formation penetrated by an injection well and at least one production well. It includes the steps of injecting a mobilizing fluid such as steam through the injection well and into the formation. This injection step is continued at a predetermined pressure and for a time interval sufficient to cause breakthrough of the mobilizing fluid to the production well. Thereafter, the pressure level in the production interval is increased and hydrocarbons are produced from the formation while maintaining increased pressure on the formation. The increase in pressure on the producing formation subsequent to



breakthrough is maintained by restricting the outflow of producing fluids through the production well while continuing injection of the mobilizing fluid and/or by injecting another fluid down the casing of the producing well while continuing injection of the mobilizing fluid. The injection of the mobilizing fluid at the increased pressure may also be continued until breakthrough occurs to another production well penetrating the formation, with the increased pressure applied to the formation by the aforesaid steps increasing the channeling effect and, hence, improving the effectiveness of the operation.

3,771,599

METHOD FOR RESTRICTING FLUID PATHWAYS THROUGH A SUBTERRANEAN FORMATION ZONE

Walter F. Buce, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 18, 1972, Ser. No. 272,963
Int. Cl. E21b *33/138*
U.S. Cl. 166—295 **10 Claims**

This invention resides in a method for restricting fluid pathways through a subterranean formation zone. A polymerizable material capable of forming popcorn polymer is positioned in the formation zone, maintained under polymerization conditions for a time sufficient to polymerize in situ at least a portion of the material and restrict fluid pathways through the zone without exerting a force on the formation which is of greater magnitude than the magnitude required for fracturing the formation zone.

3,771,600

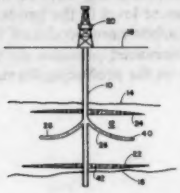
METHOD OF EXPLOSIVELY FRACTURING FROM DRAIN HOLES USING REFLECTIVE FRACTURES

William L. Hill, Richardson, Tex., assignor to Sun Oil Company (Delaware), Dallas, Tex.

Filed July 2, 1971, Ser. No. 159,232
Int. Cl. E21b *43/26*
U.S. Cl. 166—299 **7 Claims**

A method of increasing fluid conductivity of a formation by

drilling horizontal drain holes outwardly from a wellbore and fracturing the formation such that upon detonation of an explosive in the drain hole, the fractures will provide a surface for reflection of the explosive shock waves.



3,771,601

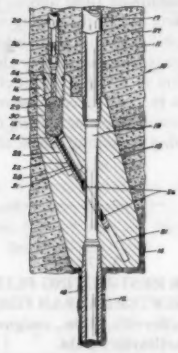
WELL BORE BLOCKING METHOD

Henry U. Garrett, 2205 Lee, Houston, Tex.

Division of Ser. No. 55,439, July 16, 1970, Pat. No. 3,684,008. This application June 2, 1972, Ser. No. 259,026

Int. Cl. E21b 29/02

U.S. Cl. 166—297 5 Claims



A blow-out preventer comprising a relatively large body means which is placed in a well bore. The body means is provided with a bore through which drill pipe and the like can extend. Traversing the bore through the body is a slideway in which is mounted a slide or blocking means. Using a suitable means of propulsion, the slide or blocking means can be moved from a position from within the slideway of non-engagement with the bore extending through the body to a position where the slide completely intersects or blocks the bore in the body. The propulsion means can be activated automatically or manually from the surface or automatically from below the surface. When the blowout preventer is used in well bores wherein drill strings or production tubing extend through the body, the apparatus is provided with a severing means which first acts to sever the pipe extending through the bore at which point the slide or blocking means is forced through the space between the severed end to completely seal off the well bore. In cases where no drill pipe or the like extends through the bore of the body means, the severing means can be dispensed with and the well bore blocked off simply by propelling the slide into the closed position, i.e. intersecting the bore.

3,771,602

USE OF MICELLAR SOLUTION AS AN EMULSION BREAKER

Thomas O. Webb, Casper, Wyo., assignor to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 20,042, March 16, 1970, Pat. No. 3,684,015, which is a continuation-in-part of Ser. No. 762,140, Sept. 24, 1968, Pat. No. 3,554,289. This application Nov. 1, 1971, Ser. No. 192,710

Int. Cl. E21b 43/25

U.S. Cl. 166—305 R 4 Claims

Production of formation fluids through a well bore from a hydrocarbon-bearing subterranean formation having a water and hydrocarbon emulsion blockage surrounding the well bore is restored by injecting about 1 to about 500 gallons per vertical foot of hydrocarbon-bearing formation of micellar dispersion into the formation to "solubilize" the emulsion. The micellar dispersion is comprised of a surfactant having an average equivalent weight of 350–525.

3,771,603

DUAL SAFETY VALVE METHOD AND APPARATUS

Talmadge L. Crowe, Houston, Tex., assignor to Baker Oil Tools, Inc., Commerce, Calif.

Filed Apr. 13, 1972, Ser. No. 243,806

Int. Cl. E21b 43/00, 33/03

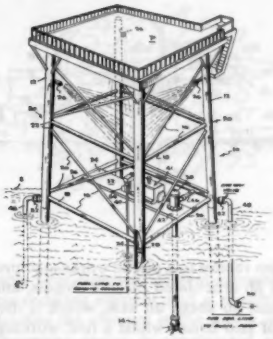
U.S. Cl. 166—314 25 Claims

Dual safety valve apparatus is utilized to automatically shut in one or a pair of producing well zones upon a reduction in control fluid pressure. A tubing hanger is run into the well on a setting tool and supports a dual tubing string when the hanger is set in the well casing. The setting tool is removed and a dual, full opening shutoff valve assembly is run into the well and seats in the tubing hanger. Control fluid pressure supplied from the top of the well holds the shutoff valves open. Each shutoff valve has a full bore opening therethrough in the open position. A shifting tool is operable by fluid pressure to mechanically open the shutoff valves and when mechanically opened by the shifting tool, the valves can receive a secondary wireline retrievable shutoff valve operable by control fluid pressure. The dual shutoff valve is retrievable, and the tubing hanger is then retrievable by a retrieving tool.

3,771,604
FIRE DAMAGE PROTECTED OFFSHORE OIL PRODUCING RIG

Robert M. Norman, and Richard H. Barron, both of Rt. No. 3, Box 988 B, Morgan City, La.

Filed Apr. 6, 1972, Ser. No. 241,624
Int. Cl. A62c *35/40*
U.S. Cl. 169—1 A 13 Claims

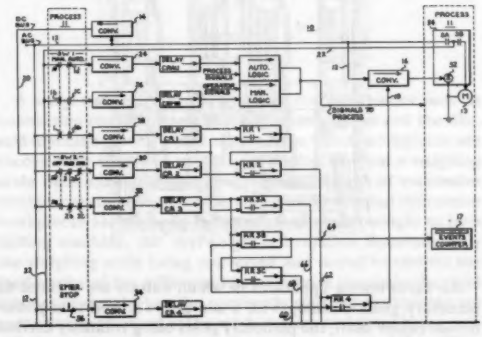


A method and means for protecting the structural integrity of offshore oil and gas producing rigs from damage due to blowout fires. The invention includes vertical, tubular members which form passageways for water and are in fluid communication with cross members providing lateral support. The water may be pumped either through an inlet depending into the water and positioned between the surrounding tubular members and then forced throughout the tubular members by a pump that is supported on a lower platform above or below the lower surface of the water, alternatively an independent vessel may be connected to one or more of the tubular members by means of a subsea line to circulate water from the sea through each of the tubular and cross members. Nozzles may be positioned on the tubular members pointing inwardly and downwardly toward the wellhead to provide a spray that may be directed into a flame and also used to direct a cooling stream to anyone of the platforms.

3,771,605
FIRE FIGHTING APPARATUS

Emilio Alberti, Castano Primo, Milan, Italy, assignor to Bergomi S.p.A., Milan, Italy

Filed Nov. 14, 1972, Ser. No. 306,485
Int. Cl. A62c *25/00, 27/22*
U.S. Cl. 169—24 6 Claims

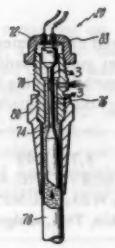


An adaptor for a fire engine of the type having an upper platform on which is mounted a foam spraying nozzle in the form of a barrel mounted for rotation to any angular position about one end. The adaptor comprises a hollow pipe having an inlet opening at one end into which foam can be sprayed by the barrel; the pipe is provided with supports by means of which it can be mounted on the upper platform of a fire engine in alignment with the barrel when this is in a horizontal position. The outlet end of the adaptor pipe is provided with means for spreading the jet of foam into a fan shape and within the adaptor pipe there are means for further expanding and emulsifying the foam produced by the barrel.

3,771,606
AUTOMATIC FIRE EXTINGUISHING SYSTEM

Russell H. James, Main St., Box 25, Volountown, Conn.

Continuation of Ser. No. 82,995, Oct. 19, 1970, abandoned.
This application Dec. 14, 1971, Ser. No. 207,801
Int. Cl. A62c *37/08*
U.S. Cl. 169—37 6 Claims

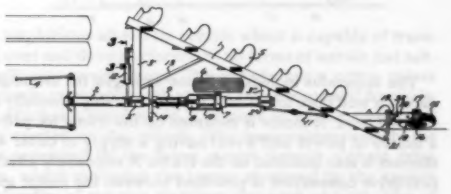


An automatic fire extinguishing system employing water as the firefighting medium and having sprinkler heads with nozzle apertures sealed with low melting point temperature responsive elements and charged with air under pressure to maintain the sprinkler heads dry while in a ready status.

3,771,607
TWO-WAY PLOW

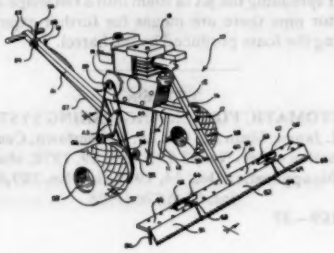
William F. Mellen, Anaheim, Calif., assignor to Alice M. Mellen, Anaheim, Calif.

Filed June 13, 1972, Ser. No. 262,356
Int. Cl. A01b *3/34, 3/46*
U.S. Cl. 172—212 9 Claims



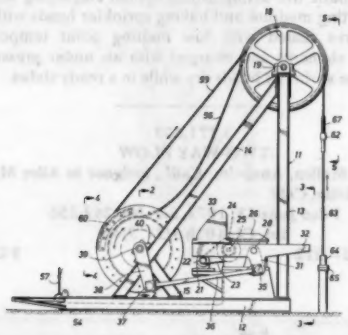
A multi-bottom turn over plow has a longitudinal tube which forms its main frame, and this frame is supported at one end by a hitch and lifting mechanism. At its rear end, the frame is supported by a tail wheel which may be removed if desired and additional plow bottoms added as required. Also a second trailing wheel is mounted on the frame and may be hydraulically actuated to raise and to support the plow assembly. Also the tail wheel is limited in its rotational movement relative to the mounted tube by means of stop lugs appropriately positioned.

3,771,608
SANDTRAP MAINTENANCE DEVICE
Edward Ancherico, Fayetteville, N.C., assignor to Eastern Turf Equipment, Inc., Fayetteville, N.C.
Filed Sept. 18, 1970, Ser. No. 73,498
Int. Cl. A01b *3/02*
U.S. Cl. 172—358 1 Claim



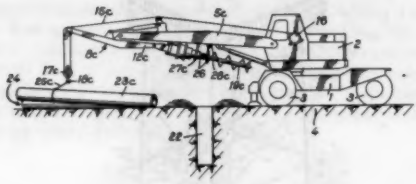
In abstract, a preferred embodiment of this invention is a self-propelled, attendant guided, sandtrap type maintenance device having trailing earth breaking tines followed by a final breaking and smoothing rake like member.

3,771,609
APPARATUS FOR SERVICING AND OPERATING A RECIPROCAL WELL PUMP OR THE LIKE
Milton F. Walther, Lufkin, Tex., assignor to Lufkin Industries, Inc., Lufkin, Tex.
Filed Apr. 10, 1972, Ser. No. 242,564
Int. Cl. A01b *45/04*
U.S. Cl. 173—29 11 Claims



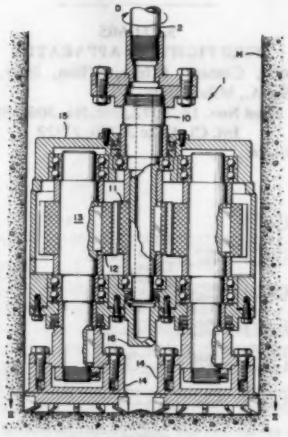
The apparatus includes a frame arranged for mounting adjacent a well bore and it may support a pulley generally above the well bore. A motor is mounted on the frame for providing a source of power and a reel having a supply of cable wound thereon is also mounted on the frame. A selectively attachable first drive connection is provided between the motor and the reel for rotating the reel to thereby pay out and take up the cable over the pulley at predetermined times to thereby lower and raise the pump in the well bore. There is also provided a selectively attachable second drive connection between the motor and the reel for imparting oscillating rotational motion to the reel at predetermined times. Line means, such as a wire line or cable, is connected to the reel and cooperative with the second drive connection for imparting reciprocal motion to the pump suspended in the well incident to the oscillation of the reel, thus eliminating the old walking beams which are conventional in the art with respect to well pumping, and at the same time, providing a simple, compact and economic unit for both servicing and operating the well pump.

3,771,610
PUBLIC WORKS MACHINES
Pierre J. Leyrat, Trilport, France, assignor to Societe Anonyme:Poclain, Le Plessis-Belleville (Oise), France
Filed Feb. 11, 1972, Ser. No. 225,528
Claims priority, application France, Mar. 22, 1971, 7110032
Int. Cl. E21c *11/02*
U.S. Cl. 173—46 3 Claims



This invention relates to a public works machine constituted by a chassis, a jib articulated on said chassis, and a beam articulated on said jib about an axis, which is disposed in the median zone of said beam, whilst a first working tool is coupled with a first end of said beam, wherein a second working tool is coupled to the second end of the beam, and each of the first and second working tools may be placed in working position whilst being held coupled at its corresponding end to the beam.

3,771,611
EARTH BORING APPARATUS
Katsuhiko Omura, and Nubuhisa Ikeda, both of Kanagawa, Japan, assignors to Tone Boring Company Limited, Tokyo, Japan
Filed Oct. 26, 1971, Ser. No. 192,282
Claims priority, application Japan, May 13, 1971, 46/32014
Int. Cl. E21b *3/08, 9/28*
U.S. Cl. 175—348 7 Claims



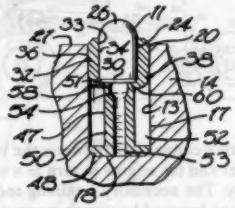
An earth boring apparatus in which cutters are secured to planetary gears meshing with a sun gear secured to a power driven center shaft, the planetary gears being rotatably carried by a planetary carrier rotatable about the axis of the center shaft, whereby each cutter is rotatable about its own axis and also can revolve about the axis of the center shaft.

3,771,612

REPLACEABLE WEAR-RESISTANT ELEMENT ASSEMBLY

Gerald L. Adcock, Lewiston, Idaho, assignor to Pacific Tooling and Engineering Company, Lewiston, Idaho

Filed July 17, 1972, Ser. No. 272,296
Int. Cl. E21c *13/00*
U.S. Cl. 175—413 4 Claims



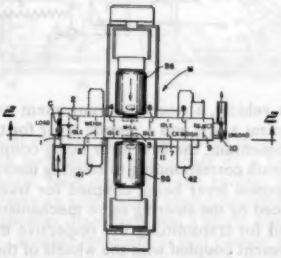
A replaceable wear-resistant element assembly is described having a wear-resistant element and a mounting device for releasably securing the element in the recess of a supporting body. The mounting device is constructed of a one-piece goblet shaped unit having a sleeve portion for receiving the element therein and a stem portion for supporting the element. The stem and sleeve portions are interconnected by a shearable web portion which will fracture when an axial force of sufficient magnitude is applied to the sleeve to cause the sleeve to move downward about the stem to release the element.

3,771,613

WEIGHT STANDARDIZATION MACHINE

Peter E. Forster, Brecksville, and Ronald R. Nowak, Kirtland, both of Ohio, assignors to The Motch & Merryweather Machinery Co., Cleveland, Ohio

Filed June 8, 1972, Ser. No. 260,814
Int. Cl. G01g *13/00*
U.S. Cl. 177—60 7 Claims



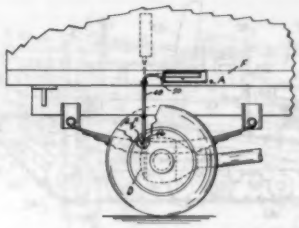
A weight standardization machine for workpieces such as connecting rods for internal combustion engines and the like, said machine having a load station from which workpieces are successively advanced to a weight station whereat a weighing scale determines the magnitude of overweight of successive workpieces thereon, and to a work station whereat successive workpieces are clamped for removal of excess weight as by a milling machine, the overweight information determined by the weighing scale being converted and stored to control the feed stroke of the milling cutter to remove precisely the right amount of metal when the previously weighed workpieces are successively clamped at the work station, and there being provided a sensing means responsive to engagement of the milling cutter with the workpiece to initiate said predetermined feed stroke as determined by the weighing scale converter.

3,771,614

WEIGHT SCALE FOR VEHICLE

Arnold Kerr, 1010 Third St., International Falls, Minn.

Filed Oct. 4, 1972, Ser. No. 294,941
Int. Cl. G01g *19/08, 3/02*
U.S. Cl. 177—137 7 Claims



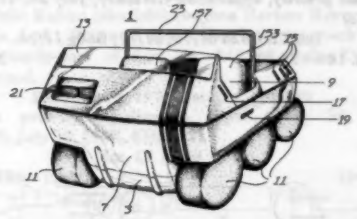
A weight scale for mounting on a vehicle including a reference back member, a pointer member having a pointer extension, a tube mounted on said back member in which the pointer is slidably mounted, a cable connected to said pointer member and extending throughout said tube and from said back member for connection with the chassis of a vehicle and a coil spring upon said cable and against said pointer member and a shoulder on said back member thereby urging said pointer member in an extended position relative to the back member.

3,771,615

AMPHIBIOUS ALL-TERRAIN VEHICLE

Anthony Rieli, 704 Washington Rd., Grosse Pointe, Mich.

Filed Aug. 6, 1971, Ser. No. 169,760
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.48 11 Claims

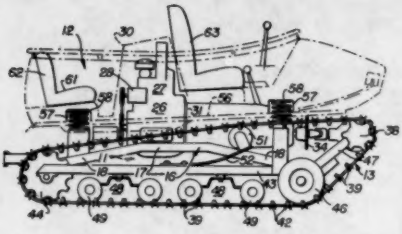


An amphibious all-terrain vehicle which is capable of translating over and through essentially all forms of terrain and substantially any environment. The vehicle has a prime mover operatively associated with at least two hydrostatic transmissions which are mounted in a manner to isolate them from forces exerted on the vehicle. The transmissions supply the power generated by the prime mover through a chain drive system, which multiplies the torque produced by the engine, to a plurality of traction members mounted on both sides of the vehicle. A lubricant is contained in a portion of the vehicle chassis structure to lubricate the chain drive system as it passes therethrough. An automatic chain tensioning device is positioned adjacent each chain of the chain drive system to prevent the chains from operatively disengaging from their mating components due to excessive chain slack during normal straight ahead operation or in the event of a sudden change in the direction of the driving forces being applied to the chain drive system by the transmissions. The vehicle operator steers, controls the forward and reverse directions, and speed of the vehicle by manipulating a single vehicle operators control member.

3,771,616
SNOW VEHICLE

Alfred Paredi, 15 Acacia Ln., Redwood City, Calif.

Filed Jan. 26, 1972, Ser. No. 220,757
Int. Cl. B62d 11/06, 21/08
U.S. Cl. 180—6.7 3 Claims

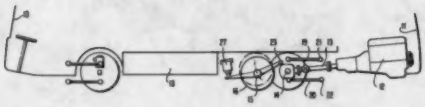


A track-type snow vehicle has engine and transmission located on a chassis so that the center of mass of the vehicle is below the middle of the body. The drive from the transmission is forward to a differential and thence to sprockets on the forward ends of the two tracks. Seats in the body are disposed forward and rearward and to either side of the middle of the body. The vehicle has proper weight distribution for stability and short turning radius and permits seating four passengers.

3,771,617
AXLE SUSPENSION IN A BUS

Walter Hornung, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed July 27, 1972, Ser. No. 275,634
Claims priority, application Germany, July 28, 1971, P 21 37 624.9
Int. Cl. B62d 61/10, 61/12; B60g 11/26
U.S. Cl. 180—24.02 31 Claims



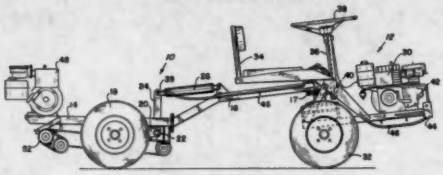
An axle arrangement in buses in which an auxiliary axle equipped with a single wheel is provided on the side of the main axle opposite the driving engine whereby the single wheel of the auxiliary axle is disposed between the longitudinal bearers of the substructure, preferably substantially in the vehicle longitudinal center.

3,771,618
MAINTENANCE VEHICLE

Frank Ekas, Sarver, Pa.

Filed Mar. 22, 1972, Ser. No. 237,019
Int. Cl. B60k 17/30
U.S. Cl. 180—42 8 Claims

A rideable, short-turning radius vehicle is provided primarily for golf course green maintenance. The vehicle body is in two parts, the accessory retaining section and the driving and steering section. The body parts are connected in a unique pivotting arrangement that permits the vehicle to make extremely short radius turns. The driving and steering section has mounted thereon a driving engine, driveable wheels, and a

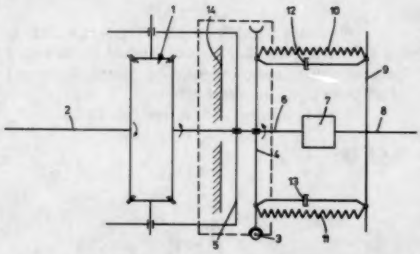


seat. The pivotting connection between the two body sections causes the driver and the engine to turn as a unit with the front end of the body. The accessory retaining section of the body may be raised and lowered by power means to vary the height of the accessories above the ground.

3,771,619
STEERING ARRANGEMENT FOR VEHICLES WITH A STEERING SERVO MECHANISM

Harald Schimkat, Flechtorf, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed July 25, 1972, Ser. No. 274,913
Claims priority, application Germany, July 28, 1971, P 21 28 356.7
Int. Cl. B62d 5/00
U.S. Cl. 180—79 11 Claims



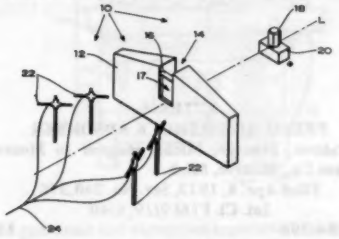
In a motor vehicle, a steering arrangement with a steering servo mechanism a first and a second lever for transmitting a rotational momentum, the first lever being coupled for transmitting momenta corresponding to steering instructions of the driver, the second lever being coupled for transmitting momenta produced by the steering servo mechanism, both levers being coupled for transmitting the respective momenta to a lever arrangement coupled with the wheels of the vehicle, the first lever providing a supporting momentum for the lever arrangement coupled with the vehicle wheels at the introduction thereto of the momenta delivered by the steering servo mechanism, a spring and damping arrangement for transmitting supporting static momenta to the first lever when the steering servo mechanism delivers momenta thereto, the second lever consisting of a pair of partial levers, the first partial lever being coupled with the steering servo mechanism at all steering angles and with the spring and damping arrangement transmitting the aiding momentum which aid the driver, the second partial lever being coupled with the first lever at all steering angles, the second partial lever being coupled with the first partial lever only at steering angles lying on a predetermined range of steering, a fixed member for arresting the second partial lever at steering angles lying beyond the predetermined range of steering angles.

3,771,620

VAPORIFIC DAMAGE MEASUREMENT ARENA

Donald W. Lockwood, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 10, 1971, Ser. No. 114,345
Int. Cl. G01l 5/14
U.S. Cl. 181—.5 NP 2 Claims



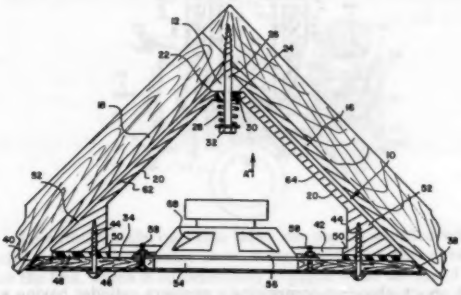
A method and apparatus is provided for investigating the effectiveness of explosive warheads by measuring the free air shock generated when hypervelocity fragments from a test warhead inpact a target plate.

3,771,621

ACOUSTICAL SPEAKER MOUNTING MEANS

Adam D. Goettl, 4960 E. Palomino Rd., Phoenix, Ariz.

Filed Nov. 10, 1971, Ser. No. 197,233
Int. Cl. G10k 13/00; H04r 1/28
U.S. Cl. 181—31 B 14 Claims



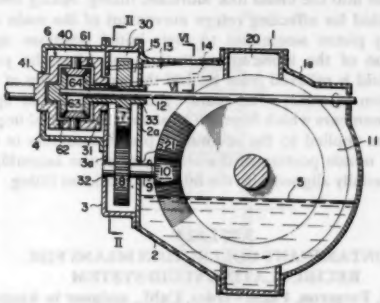
An acoustical speaker mounting means of diverging shape adapted to be mounted in the corner of a building room between adjacent walls and the room ceiling; the mounting means comprising an acoustically sealed chamber structure at the rear of a speaker diaphragm and a single screw fixture for mounting the chamber structure in said corner; modifications of the chamber structure and the face plate therefor, together with means for sealing the face plate to the chamber structure are also disclosed.

3,771,622

DEVICE FOR LUBRICATING A TANDEM AXLE ASSEMBLY WITH AN INTERAXLE DIFFERENTIAL

Hiroyuki Hyakumura, Yokohama, Japan

Filed Mar. 30, 1972, Ser. No. 239,613
Claims priority, application Japan, Mar. 31, 1971, 46/23427; Mar. 31, 1971, 46/23428; Mar. 31, 1971, 46/23429
Int. Cl. F16n 7/16
U.S. Cl. 184—11 A 5 Claims



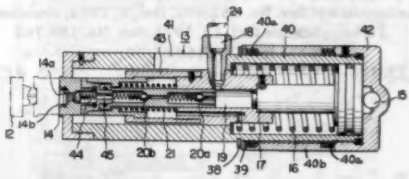
In a forward axle assembly of a tandem axle assembly including a carrier mounted to an axle housing which has a first chamber formed therein, a gear housing mounted on the carrier and forming a second chamber therebetween, a differential case mounted on the gear housing and forming a third chamber therebetween, an interaxle differential disposed in the third chamber for carrying and distributing the torque from an engine, transfer gears being disposed in the second chamber and operatively connected between the interaxle differential and the carrier, a ring and pinion gear assembly meshed with each other and disposed in the first chamber, the pinion gear being connected to one of the transfer gears, a lubricating device for the interaxle differential, the lubricating device comprising a lubricating oil passage for conducting the lubricating oil directly from the ring gear in the axle housing to the interaxle differential in the third chamber.

3,771,623

LUBRICANT ASSEMBLY FOR SUPPLYING LUBRICANT TO CHAIN LINKS

Naoyuki Sugawara, Kawasaki-shi; Junji Yamada, Odawara-shi; Takeshi Yamate, Yokohama, and Tadashi Yoshikawa, Fujisawa-shi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha (aka Tokyo Shibaura Electric Co., Ltd.), Kanagawa-ken and Ishikawajima Harima Jyukogyo Kabushiki Kaisha (aka Ishikawajima Harima Heavy Industries Co., Ltd.), Tokyo-to, Japan, part interest to each

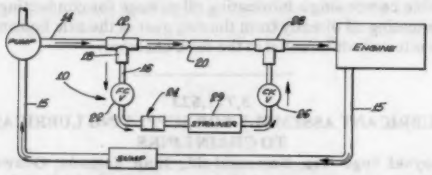
Continuation-in-part of Ser. No. 843,992, July 23, 1969, abandoned.
Filed Nov. 9, 1971, Ser. No. 197,040
Claims priority, application Japan, July 30, 1968, 43/53380; July 30, 1968, 43/53381
Int. Cl. F16n 7/00
U.S. Cl. 184—15 A 10 Claims



A lubricant assembly comprises a main cylinder, a main piston assembly reciprocal within the main cylinder, a secondary cylinder connected to the main piston assembly, and a secondary piston assembly reciprocal within the secondary cylinder and having a conical nozzle portion engageable with a chain link lubricant fitting. The main and secondary piston assemblies define between them a lubricant chamber and the secondary piston assembly is provided with a lubricant passage for communicating the lubricant chamber with the conical nozzle portion. The main and secondary piston assemblies are mounted for movement together as an integral unit during a first stage of operation in response to pressurized fluid applied to a working face portion of the main piston as-

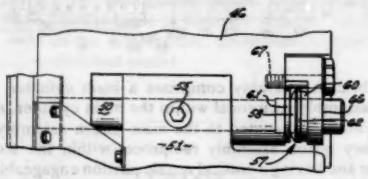
sembly to effect movement of the nozzle portion of the secondary piston assembly into engagement with the chain link fitting which is to be lubricated. The main piston assembly then undergoes further movement relative to the secondary piston assembly to diminish the volume of the lubricant chamber and accordingly force the lubricant contained therein through the lubricant passage and out through the nozzle portion into the chain link lubricant fitting. Spring means are provided for effecting return movement of the main and secondary piston assemblies to their initial positions upon completion of the lubricant operation and after the pressurized fluid is relieved from behind the working face of the main piston assembly. The main cylinder is mounted upon resilient members which function to absorb any lateral impulsive forces applied to the secondary piston assembly in the event the nozzle portion of the secondary piston assembly is not truly axially aligned with the intended lubricant fitting.

3,771,624
CONTAMINANT COLLECTION MEANS FOR RECIRCULATING FLUID SYSTEM
Edward J. Forgeron, Palos Verdes, Calif., assignor to Analysts Inc., Rolling Hills Estates, Calif.
Filed Oct. 20, 1971, Ser. No. 190,791
Int. Cl. F16n *39/06*
U.S. Cl. 184—6.24 **11 Claims**



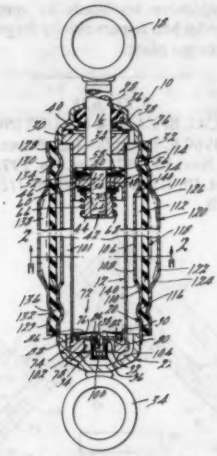
Apparatus for collecting contaminant samples in a recirculating fluid system, said apparatus comprising a fluid by-pass system which includes replaceable contaminant collection means on which contaminants are deposited, means to regulate flow of the fluid through the contaminant collection means, means to prevent reverse fluid flow through the contaminant collection means.

3,771,625
DISC BRAKE CALIPER MOVEMENT CONTROL
Samuel J. Martins, Los Angeles, Calif., assignor to Airheart Products, Inc., Van Nuys, Calif.
Continuation of Ser. No. 882,976, Dec. 8, 1969, abandoned. This application Oct. 13, 1971, Ser. No. 188,768
Int. Cl. F16d *65/64*
U.S. Cl. 188—71.8 **4 Claims**



A disc brake caliper carries at least one braking element to face the disc side, and the caliper is mounted to shift in one direction relative to the disc in order to bring that element into braking engagement with one side of the disc in response to actuating force exertion on the caliper; and retractor means is provided to yieldably resist such shifting of the caliper and to displace the latter in the opposite direction to carry the braking element out of braking engagement with the disc in response to reduction of actuating force exertion. The caliper may be mounted on a shaft to compress a spring in response to caliper shifting; spring compression force may be transmitted to the shaft via a part frictionally gripping the shaft; and that part may be shiftable along the shaft only in response to exertion of force substantially greater than that required to fully compress the spring, thereby to compensate for brake element wear.

3,771,626
PRESSURIZED SHOCK ABSORBER
Dale A. Palmer, Monroe, Mich., assignor to Monroe Auto Equipment Co., Monroe, Mich.
Filed Apr. 4, 1972, Ser. No. 240,376
Int. Cl. F16f *9/19, 9/40*
U.S. Cl. 188—298 **11 Claims**

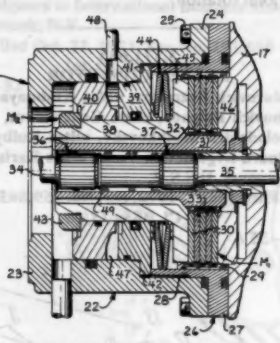


A shock absorber comprising a pressure cylinder having a valved piston reciprocally disposed therein, a reserve tube surrounding the pressure cylinder and defining a fluid reservoir therewith, valve means for selectively controlling fluid flow between the pressure cylinder and the reservoir, a resilient elastomeric diaphragm extending around the outer periphery of the reserve tube, means defining a fluid cavity between the reserve tube and the diaphragm, means for communicating fluid between the reservoir and the cavity and, an outer housing member surrounding the diaphragm and providing an area into which the diaphragm may expand as fluid is communicated into the cavity.

3,771,627
MODULAR BRAKE ASSEMBLY
Samuel I. Caldwell, and John C. Wanner, both of Aurora, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 10, 1972, Ser. No. 242,724
Int. Cl. B60t *13/10*
U.S. Cl. 188—170 **14 Claims**

The final drive for a track-type vehicle comprises a speed reduction gear train operatively connectible to a hydrostatic

drive motor to drive a track engaging sprocket. A modular parking brake assembly is detachably mounted between the



motor and gear train and comprises separable brake and brake actuating modules mounted in a housing to facilitate expeditious assembly and servicing.

3,771,628

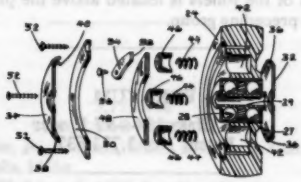
WHEEL RETARDER

James Garth Close, 3215 29th St., Lubbock, Tex.

Filed Jan. 17, 1972, Ser. No. 218,124

Int. Cl. F16d *59/00*

U.S. Cl. 188—189 **12 Claims**



An automatically operable brake for use on wheeled vehicles such as merchandise carts, baby carriages, wheel chairs, or the like, which is automatically engaged when the speed of the cart exceeds a desired maximum and remains engaged until the cart is brought to a complete stop and the direction of rotation of the wheels on the cart is momentarily reversed.

3,771,629

SHOCK ABSORBER AND METHOD OF ASSEMBLY

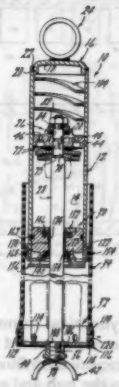
John H. Fader; Johan H. Keijzer, both of Hasselt; Marcel J. R. Graulus, and Roland H. C. Beets, both of St. Truiden, all of Belgium, assignors to Monroe Belgium N. V., St. Truiden, Belgium

Division of Ser. No. 45,867, June 12, 1970, abandoned. This application Mar. 30, 1972, Ser. No. 239,814

Int. Cl. F16f *9/36, 9/43*

U.S. Cl. 188—322 **5 Claims**

A shock absorber comprising an elongated cylindrical pressure cylinder having a piston reciprocally disposed therewithin and connected to a piston rod extending outwardly from one end thereof, the piston rod carrying a dirt shield which extends coaxially of the pressure cylinder and in partial surrounding relationship therewith. The pressure cylinder is adapted to be filled with preselected quantities of a hydraulic damping fluid and a pressurized gas for damping reciprocal movement of the piston therewithin. The piston is provided with a novel valve arrangement which controls the compression and rebound characteristics of the shock absorber, and one end of the pressure cylinder is provided with a novel rod guide assembly which is designed so as to provide for convenient charging of the cylinder with the aforesaid pressurized gas. The interior of the pressure cylinder is provided with a generally helically



shaped baffle arrangement which is compressible axially within the cylinder in response to reciprocal movement of the piston therein and functions to prevent undesirable foaming or aeration of the hydraulic fluid during operation of the shock absorber.

3,771,630

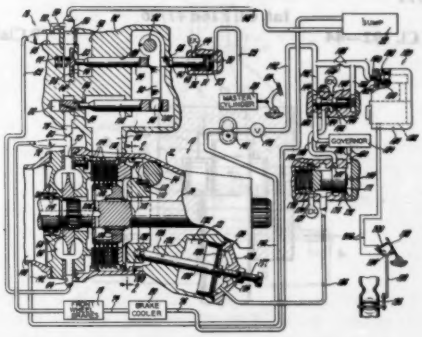
ANTI-CREEP BRAKE CONTROLLED BY THROTTLE AND VEHICLE SPEED

Erkki Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 114,601, Feb. 11, 1971, Pat. No. 3,696,893. This application May 26, 1972, Ser. No. 257,438

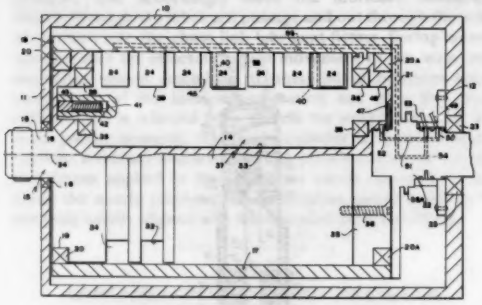
Int. Cl. B60k *29/00*

U.S. Cl. 192—3 TR **6 Claims**



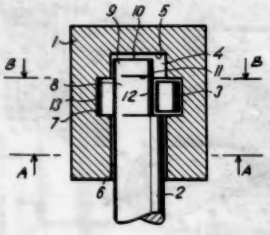
A brake-engaging system including brake discs mounted in part on a transmission output shaft and in part on the transmission housing for stopping the rotation of the output shaft in response to the combination of a fluid pressure signal indicative of a substantially zero throttle plate opening and a substantially zero vehicle speed.

3,771,631
HYDRAULIC TRANSMISSION
John Hugie, Box 837 Tisdale, Saskatchewan, Canada
Filed Aug. 30, 1972, Ser. No. 285,074
Int. Cl. F16d *31/06*
U.S. Cl. 192—58 R 11 Claims



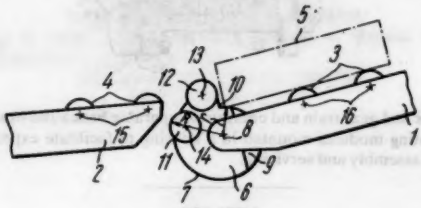
An engine drives a cylindrical drum mounted for rotation around a hub which in turn is mounted for rotation in an outer casing which contains transmission fluid. A rotor is journalled for rotation off center in the hub and a plurality of gear lobes is secured at spaced intervals internally around the inner wall of the drum. The rotor is provided with corresponding cut out portions which engage the lobes as the hub rotates thus rotating the rotor to present the next cut out to the next lobe. Grooves are provided at the sides of the cut outs and the rotor is end shiftable either automatically by oil pressure or manually. Normally the transmission fluid bypasses between the lobes and the rotor due to the grooves but as the rotor is end shifted the grooves gradually close off so that drive is transmitted hydraulically from the drum through the lobes to the lobes thus rotating the hub which acts as the driven portion of the assembly.

3,771,632
TEXTILE MACHINE CONSTRUCTION
Jiri Kodousek, and Milos Mladek, both of Usti Nad Orlici, Czechoslovakia, assignors to Elitex Zavody Textilniho Strojirenstvi, Liberec, Czechoslovakia
Filed Jan. 20, 1972, Ser. No. 219,428
Claims priority, application Czechoslovakia, Jan. 28, 1971, 602/71
Int. Cl. F16d *41/06*
U.S. Cl. 192—44 9 Claims



A feeding roller for feeding fibrous sliver in a textile machine has an axial hollow into which an end portion of a driven shaft of the machine extends. A circumferential surface portion of the shaft defines with a corresponding portion bounding the hollow of the roller a circumferentially extending gap which tapers or converges in both circumferential directions. Located in a recess at the widest point of this gap is a cylindrical coupling member which extends into the gap so that, when relative angular displacement of roller and shaft occur, the coupling member will become wedged, in one or the other narrow end of the gap and thus connect the roller and shaft for joint rotation.

3,771,633
ROLLER CONVEYOR
Alexandr Fedorovich Bezrukov, ulitsa Klubnaya-8-A, kv. 75; Petr Semenovich Balykov, ulitsa Goncharova, 5, kv. 7; Arkady Vsevolodovich Mashkovsky, ulitsa Kuibysheva 5, kv. 15, and Eduard Evgenievich Vasin, ulitsa Karla Libknekhta, 6, all of Ulyanovsk, U.S.S.R.
Filed June 5, 1972, Ser. No. 259,845
Int. Cl. B65g *13/00*
U.S. Cl. 193—35 A 2 Claims

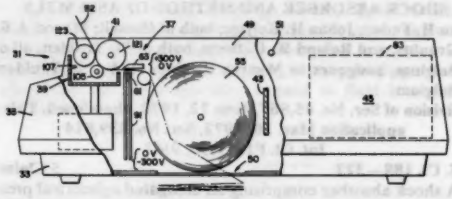


A roller conveyor comprising groups of consecutively mounted carrying rollers over which a load moves under its own weight. Installed at the end of each group is a transfer roller with a spiral surface, transferring the load from the rollers of one group onto those of the following group. The axis of the first of the rollers is located above the plane of roller axes of the preceding group.

ERRATUM

For Class 194—97 R see:
Patent No. 3,771,637

3,771,634
SURFACE PATTERN STYLUS BOARD
Reginald T. Lamb, Mountain View, Calif., assignor to Bausch & Lomb, Incorporated, Rochester, N.Y.
Filed May 6, 1971, Ser. No. 140,824
Int. Cl. B41j *3/50*
U.S. Cl. 197—1 R 17 Claims



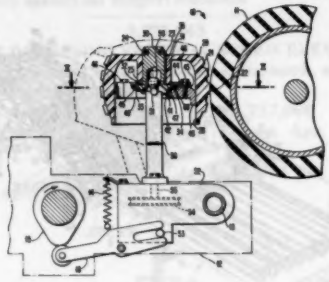
A stylus board for a printing machine prints from styli formed on the face of the board. The printing styli can be shaped by etching or deposition to give accurate stylus shapes in a variety of patterns. The board may be curved or folded to elevate the styli at the printing station.

3,771,635

TYPE ELEMENT SUPPORT

George T. Miles, and Selahattin A. Okcuoglu, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,680
Int. Cl. B41j 1/60
U.S. Cl. 197—52 7 Claims



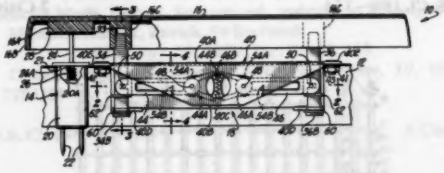
Clearance take-up bias is added to the support structure for a rotatable type element to minimize variations in effective impact force previously induced by the existence of varied amounts of slippage and parts flexure that wasted a portion of the available impact energy.

3,771,636

SPACE BAR ASSEMBLY

Frank F. Kerns, Jr., Samuels, Idaho, assignor to Clare-Pendar Co., Post Falls, Idaho

Filed Apr. 2, 1971, Ser. No. 130,681
Int. Cl. B41j 19/00
U.S. Cl. 197—82 26 Claims



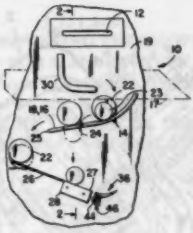
A manual keyboard unit having a number of regular manual keys of uniform "touch" or "feel" includes a commonly provided elongatgd manual input operator such as a space bar. The space bar is coupled to a motion equalizing or balancing assembly including a pair of supports coupled by a mechanism which imparts uniform movement to the elongated bar regardless of the point of manual actuation. A bias spring acting on the levers can balance the mass and friction of the equalizing assembly and the bar to give the space bar the desired "touch" or "feel."

3,771,637

COIN SEPARATOR

Argyle Glenn Lautzenhiser, Magnolia, Mass., assignor to Mars, Incorporated, McLean, Va.

Filed Apr. 30, 1971, Ser. No. 138,988
Int. Cl. G07f 3/02
U.S. Cl. 194—97 R 11 Claims



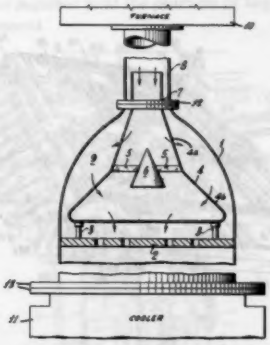
A coin separator for spacially separating facially adjacent coins is disclosed which includes a pair of laterally adjacent coin conveying surfaces having different profiles whereby each coin of a pair of facially adjacent coins rolls on one of the surfaces and leaves its surface at a different point in time or location than the other coin leaves the other surface. A third surface may be employed to receive coins leaving the laterally adjacent surfaces and change their direction of movement.

3,771,638

METHOD AND APPARATUS FOR PREVENTING COKE OBSTRUCTIONS IN PYROLYSIS PLANTS

Hans Schneider; Richard Gustav Hussner, both of Heide/Holst, and Raimund Erhard Fischer, Hemmingstedt, all of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Mittelweg, Germany

Filed Dec. 3, 1970, Ser. No. 94,734
Int. Cl. B01d 46/00
U.S. Cl. 196—98 1 Claim

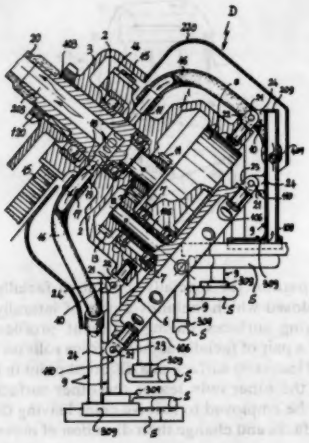


An apparatus for the prevention of coke obstruction in a pyrolysis plant, for example in the cracking of ethane in the manufacture of ethylene, wherein cracked gases from a pyrolysis furnace at a temperature of 750° to 850° C. are passed to a cooler and a screen is disposed in the inlet portion of the cooler at an easily accessible portion whereby the on stream line of the pyrolysis stream is extended.

3,771,639
DEVICE FOR THE CONTINUOUS HANDLING OF RODLIKE ARTICLES PARTICULAR CIGARETTES PERFECTLY ALIGNED IN ROWS

Filippo Giatti, Bologna, Italy, assignor to AMF Incorporated, White Plains, N.Y.

Filed Sept. 7, 1972, Ser. No. 286,850
Claims priority, application Italy, Sept. 11, 1971, 12914 A/71
Int. Cl. B65g 47/26
U.S. Cl. 198—25 6 Claims

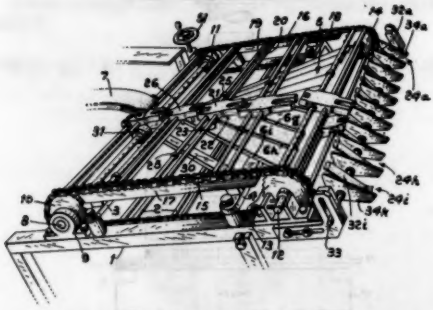


A rotatable device for automatically transferring an aligned row of rod-like articles moving along a first pre-set path to a second pre-set path off-set from the first path.

3,771,640
CHANNELING CONVEYOR

Hubert E. Tobey, Milltown; John W. Hood, East Brunswick, and Dee L. Irvin, Moonachie, all of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 28, 1972, Ser. No. 248,570
Int. Cl. B65g 47/26
U.S. Cl. 198—31 AA 9 Claims

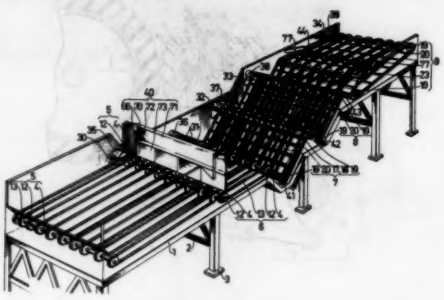


A channeling Conveyor is configured with a plurality of plaks slidably mounted on rods and moving in a continuous loop, and a cam track bed positioned within the loop has a number of V-shaped track levels. The plaks selectively engage the cam tracks to provide a sequential channeling of the plaks in a continuous manner. An input conveyor feeds items to the plaks and an output means positioned at the end of the conveyor receives the conveyed items in a serial manner across the width of the conveyor. A speed control is coupled to the loop drive to time the speed of the channeling conveyor to the received input items.

3,771,641
METHOD AND AN APPARATUS FOR CONVEYING ELONGATED OBJECTS ONE-BY-ONE

Karl-Erik Jonsson, and Olof Edvin Frisk, both of Ornskoldsvik, Sweden, assignors to Mo Och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Continuation-in-part of Ser. No. 847,283, Aug. 4, 1969, abandoned. This application Sept. 2, 1971, Ser. No. 177,898
Claims priority, application Sweden, Aug. 2, 1968, 10521/68
Int. Cl. B65g 47/26
U.S. Cl. 198—34 14 Claims

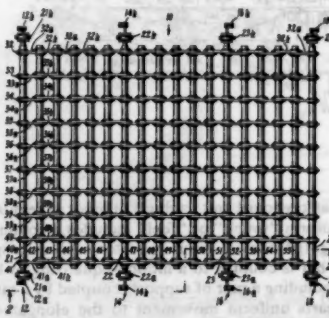


A process and apparatus for conveying elongated objects such as logs one-by-one and sideways from one place to another is provided. The objects are first conveyed along a horizontal path, with control of the quantity conveyed per unit of time, and then transported through two or more sequentially arranged upwardly inclined sections, such as chain conveyors, at an angle to the horizontal within the range from about 35° to about 55°, of such magnitude that the objects thereon attempt to assume a horizontal position, with their longitudinal axis perpendicular to the conveying direction. The conveying speed in each stage is increased in the conveying direction so as to separate the objects one from the other, from those in the more slowly moving sections, and cause them to be delivered one-by-one to the place of delivery.

3,771,642
PLATFORM ASSEMBLY FOR A MULTIPLE CHAIN PAIR TRANSPORT DEVICE

Kurt Schatte, Hopewell Junction, N.Y., assignor to Z-Loda Corporation, New York, N.Y.

Filed Jan. 13, 1972, Ser. No. 217,448
Int. Cl. B65g 13/00
U.S. Cl. 198—154 3 Claims



As described herein, a platform for a multiple chain pair transport device includes a plurality of spaced rigid linear

members coupled at their ends to selected chain pairs and a plurality of selectively flexible interconnecting members. The interconnecting members are arranged in a grid pattern between the chain pairs and include spaced pairs of complementary shaped locking members. The locking members comprise overlapping portions that are relatively rotatable through a predetermined arc and are supported by and spaced between the rigid linear members. The overlapping portions include matching arcuate keyways and protrusions which permit the locking members to flex upwardly and to be rigidly locked in a horizontal position in response to loads bearing downwardly against the support members.

3,771,643

START-REVERSING VERTICAL SCREW ELEVATOR

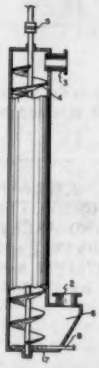
Claus A. Schmidth, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Mar. 22, 1972, Ser. No. 237,068

Claims priority, application Great Britain, Apr. 14, 1971, 9395/71

Int. Cl. B65g *33/14*; B67d *5/06*

U.S. Cl. 198—213 **2 Claims**



A conveyor is disclosed for granular or pulverulent materials which comprises a vertically disposed screw elevator rotatable within a casing and a specially constructed receptacle at the inlet end of the casing for receiving material deposited when the direction of rotation of screw is reversed to free compacted material in the casing.

3,771,644

DRIVING UNITS FOR PRODUCING A RECIPROCATORY AND OSCILLATORY MOTION SIMULTANEOUSLY

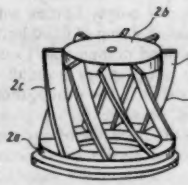
Reinald Mafli, Urdorf, Switzerland, assignor to Kumag A.-G. Maschinenfabrik, Zurich, Switzerland

Filed Nov. 10, 1970, Ser. No. 88,418

Claims priority, application Switzerland, Nov. 19, 1969, 17201/69

Int. Cl. B65g *27/00*

U.S. Cl. 198—220 CA **5 Claims**



A driving unit for producing reciprocatory and oscillatory motion simultaneously comprises a pot-shaped plastics component comprising a disc-shaped part spaced from and connected to a ring-shaped part by a plurality of connected members in the form of leaf springs extending helically between the parts. An electromagnet is mounted within the component, the ring-shaped part of which is mounted on a base member and the armature of the electromagnet being rigid with the disc-shaped part. The leaf springs are substantially rigid longitudinally and flexible transversely whereby actuation of the electromagnet causes the disc-shaped part to move linearly and rotatably relative to the ring shaped part.

3,771,645

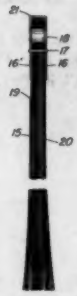
PACKAGE FOR DISPENSING THERMOPLASTIC BAGS AND METHOD FOR MANUFACTURE THEREOF

Gerald Raymond Wendel, Covington, Ga., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 14, 1971, Ser. No. 207,806

Int. Cl. B65d *71/00*; B26f *1/24*

U.S. Cl. 206—57 A **6 Claims**



A dispensing package arrangement for thermoplastic bag structures and the like comprising a stack of superimposed, thin, plastic bags characterized by having a lip formed on the rear bag wall comprising an extension of the bag back wall which extends up beyond the open mouth portion of the bag, i.e. above the upper edge of the bag front wall. A header, or retaining means, is folded over the upper portion of the superimposed bag lip members and its lower edge is positioned so that it is above the open mouth portion of the bag structure. Such a header member hold the plurality of bags in a uniform, stacked alignment.

3,771,646

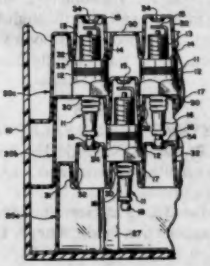
SHIPPING HOLDER FOR SPARK PLUGS OR THE LIKE

Joseph A. Mascetti, Jr., Glen Ellyn, Ill., assignor to Plastofilm Industries, Inc., Wheaton, Ill.

Filed June 28, 1972, Ser. No. 267,237

Int. Cl. B65d *1/34*, *71/00*

U.S. Cl. 206—65 K **10 Claims**



A rectangular plate has four sidewalls projecting therefrom. There is a continuous flange about the distal ends of the

sidewalls. The plate has a series of openings arranged in a given pattern as oriented with respect to one of the sidewalls. These openings are large enough to permit the insulator of a spark plug to project therethrough, but sufficiently small so that the plate about the openings will abut the spark plug body. A second set of conformations are positioned in the same pattern as oriented with respect to the opposite sidewall. These second conformations each comprise an annulus extending from the plate in the same direction that the sidewalls extend therefrom and a thimble within the annulus, joined to the distal end of the annulus and extending back beyond the plate in the opposite direction. This thimble is of a size to accept the electrode ends of the spark plugs while contacting the abutment of the plug at the end of the thread. The described structure is vacuum molded from plastic and a plurality of them are stacked to hold a plurality of spark plugs for shipment.

3,771,647

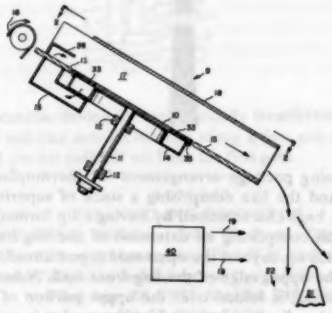
SOLID WASTE OPENING MACHINE

Edward H. Cumpston, Jr., 43 Monument Ave., Old Bennington, Vt.

Continuation-in-part of Ser. No. 101,867, Dec. 28, 1970, abandoned. This application Apr. 19, 1972, Ser. No. 245,618

Int. Cl. B07b *13/10*

U.S. Cl. 209—73 **38 Claims**



A chute spreads and feeds stacks or piles of waste material to a machine that passes the mixed solid waste material over the surface of an inclined, rotating disk that has evacuated perforations for gripping some of the waste material and carrying it around the disk. A vacuum box under the disk extends in an arc part way around the disk from the inlet toward the outlet of the machine to create the vacuum near the inlet for carrying material around the disk and to release the vacuum near the outlet. Released material is thrown against an impact wall positioned beyond the vacuum box, and an air blast is directed along the impact wall and through the outlet of the machine. The effect is to spread and open some of the solid waste material, particularly the reusable paper.

3,771,648

CHAIN SYSTEM FOR THE SELECTION AND SEPARATION OF OBJECTS

Antonio Lozano Revuelta, Madrid Ave. 95, 52, Barcelona, Spain

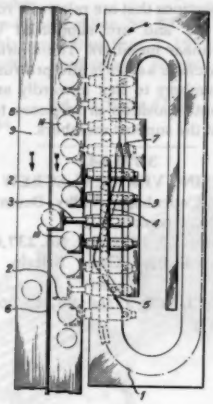
Filed Mar. 30, 1972, Ser. No. 239,631

Claims priority, application Spain, Apr. 7, 1971, 390,486

Int. Cl. B07c *3/06*

U.S. Cl. 209—74 R **6 Claims**

Objects carried in a single row on a first moving surface are arranged into two rows thereon or are selectively transferred to a second moving surface by partition means carried by thrusters. The thrusters are fixed on a movable transmission member and a cam follower carried by each thruster is diverted from a first cam run into a second cam run by



switching means when it is desired to arrange the objects into two rows or to transfer selected ones from the first to the second moving surface.

3,771,649

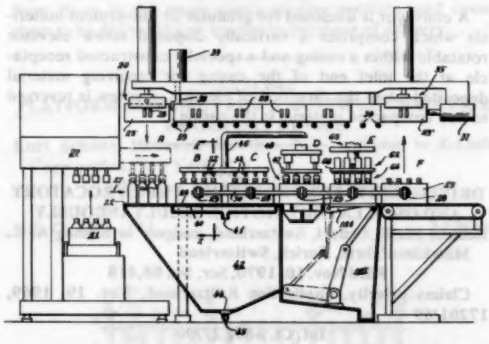
HYDRAULIC PRESSURE BOTTLE TESTING METHOD AND MACHINE

Leopold Strauss, 18 Judith Ct., East Rockaway, N.Y.

Filed July 17, 1972, Ser. No. 272,325

Int. Cl. B07c

U.S. Cl. 209—74 R **19 Claims**



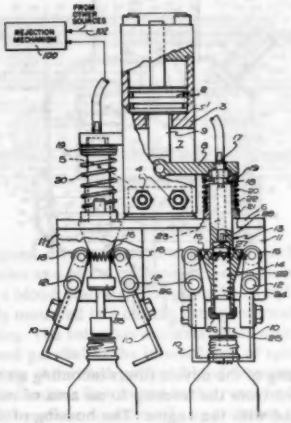
Means are disclosed for automatically filling a group comprising a large number of empty bottles with fluid such as water, advancing the entire group of filled bottles to a first test station where an axial load comparable to capping pressure and internal hydraulic test pressure is simultaneously applied to the mouths of all bottles in the group, then advancing the previously loaded and pressure tested group of bottles to another station where the presence of any ruptured bottles is detected and such broken bottles are selectively disposed of by gravity drop through a trap door while sound bottles are retained by automatic hydrostatic selective chunks and advanced from the tester to a conveyor discharge. Excess water is captured in a tank below the test table, filtered and recirculated, while broken glass may be removed by a discharge.

3,771,650

BOTTLE-GAUGING MEANS

Ian Henderson, and Geoffrey Acaster, both of Rotherham, England, assignor to Beatson, Clark & Company, Limited

Filed May 22, 1972, Ser. No. 255,577
Int. Cl. B07c
U.S. Cl. 209—80 7 Claims



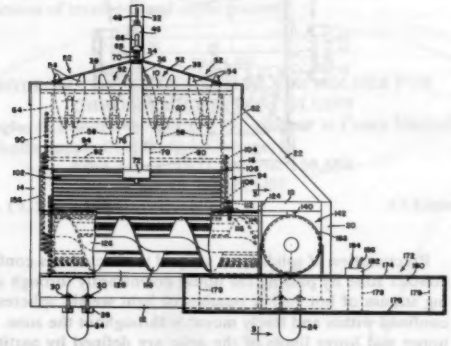
Gauging means for the bore of a neck of a bottle or the like, comprising take-out head holding tongs, normally associated with a bottle-making machine for lifting formed bottles from a mould and gauging means situated within the tong head, and capable of movement relative to the tongs.

3,771,651

ROOT CROP CLEANING ROLLS

Richard Wayne Hook, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 26, 1972, Ser. No. 318,095
Int. Cl. B07b *13/04*
U.S. Cl. 209—107 8 Claims



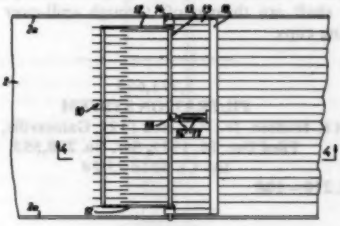
Root crop cleaning apparatus including a pair of adjacent, counterrotating cleaning rolls arranged in root crop receiving relation, one of the rolls being formed by a plurality of resilient disks mounted on a shaft and maintained at equal axial distances by means of smaller diameter spacers interposed between each adjacent pair of resilient disks, and the other roll being formed by a plurality of axially extending rods connected to a shaft at equal radial distances from the shaft and at equal circumferential distances from each other, the resilient disks on the one roll being yieldable axially and cooperable with the axially extending gaps between the rods on the other roll to permit rocks and other foreign objects to pass between the rolls without causing damage to the apparatus.

3,771,652

DEVICE FOR COUNTING FLOATING PRODUCTS

Calude Joseph Rousselie, Saint-Sylvain d'Anjou, Maine et Loire, and Pierre Lacharlotte, Ecouflant, Maine et Loire, both of France, assignors to S.I.C.A. "Romanjori", Ecouflant, Maine et Lorie, France

Filed Feb. 4, 1972, Ser. No. 223,478
Claims priority, application France, Feb. 16, 1971, 7106559
Int. Cl. B07c *7/00*
U.S. Cl. 209—122 6 Claims



A device for determining the quantity of products, notably fruits, traveling by buoyancy in a trough in which a water circulation is maintained comprises two groups of retractable barrier elements disposed across the flow path upstream and downstream of the trough, respectively, and adapted temporarily to prevent any movement of the products carried along by the fluid stream. These elements define with the walls of the trough a buoyancy area adapted to receive a predetermined amount of floating products.

3,771,653

COMPOST FOR REMOVING OIL FILMS FROM WATER

John P. Harnett, Chicago, Ill., assignor to International Minerals & Chemical Corporation, Libertyville, Ill.

Filed Nov. 17, 1970, Ser. No. 90,459
Int. Cl. C02b *9/02*
U.S. Cl. 210—40 8 Claims

An oil film is removed from the surface of water by contacting the same with compost prepared by the bacterial digestion of organic waste material.

3,771,654

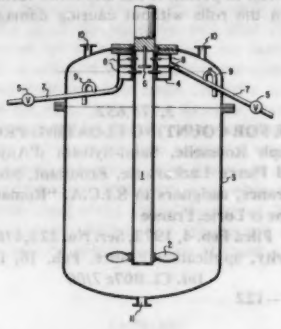
CENTRIFUGAL SEPARATOR

Heribert Meissner, Cologne-Bayenthal, Germany, assignor to Josef Meissner, Cologne-Bayenthal, Germany

Continuation-in-part of Ser. No. 23,285, March 27, 1970, abandoned. This application Apr. 9, 1971, Ser. No. 132,709
Claims priority, application Germany, Mar. 27, 1969, P 19 15 744.9
Int. Cl. B01d *21/26*
U.S. Cl. 210—84 6 Claims

Immiscible liquids of different specific gravities are separated in a hollow rotating shaft of a vessel. The hollow

shaft and related structure to receive the separated liquids include a separating surface in the form of a plate disposed in



the upper end of the hollow shaft. The media separated in the hollow shaft are thrown off through spill-over pipes into collecting cups.

3,771,655

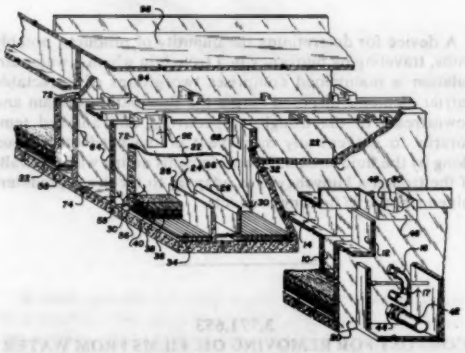
FILTRATION SYSTEM

Herbert E. Hudson, Jr., P.O. Box 1121, Gainesville, Fla.

Filed Dec. 16, 1971, Ser. No. 208,555

Int. Cl. B01d *23/24*

U.S. Cl. 210—108 **14 Claims**



A filtration system is disclosed which includes an inlet passageway having restriction means therein. The restriction means may be an orifice plate or a small sized passage, and this determines the difference in the fluid levels between a supply conduit and the filter chamber into which the influent water is delivered. The restriction means also causes changes in level due to changes in flow rate to be more gradual, thus causing filtration rates to change more slowly. The use of the restriction means in the inlet passageway further allows a changing flow rate to be supplied to the system and also provides a declining flow rate through the system as the filtration progresses.

3,771,656

OIL CLEANING DEVICE FOR AUTOMOTIVE ENGINES

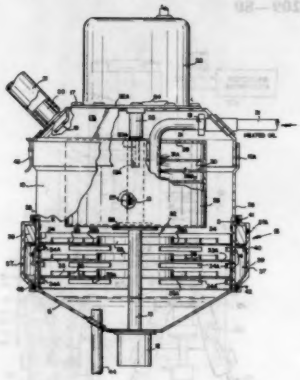
Roger M. Leaming, 4087 W. 18th Ave., Eugene, Oreg.

Filed Feb. 28, 1972, Ser. No. 229,972

Int. Cl. F01m *1/10*

U.S. Cl. 210—168 **2 Claims**

An oil treating device receiving a pressurized flow of oil from an internal combustion engine, the device including a housing within which is journalled a centrifuge cup provided with a multitude of contaminant collection surfaces. A baffle for the centrifuged oil directs the oil along a tortuous path while simultaneously a flow of air is passed over the oil for the evaporation of volatile contaminants. A filter ring in place



about a housing of the device filters incoming air which eventually is drawn from the housing to an area of negative pressure associated with the engine. The housing of the device is separable with a closure cap supporting an electric motor having an output shaft in insertable engagement with a centrifuge spindle.

3,771,657

APPARATUS FOR CONTACT BETWEEN FLUIDS

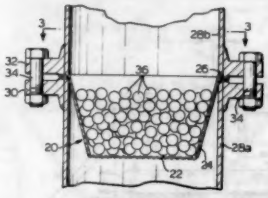
James W. Gulyas and Charles Vydra, both of Fort Saskatchewan, Alberta, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed Feb. 18, 1972, Ser. No. 227,458

Claims priority, application Canada, Mar. 29, 1971, 108,904

Int. Cl. C02b *1/20*

U.S. Cl. 210—218 **6 Claims**

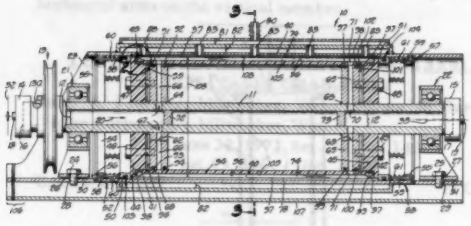


Precipitation of solids from a liquid is effected in a confined contact zone by passing the liquid downwardly through a rising stream of hot gas. A number of light weight spheres are confined within and freely movable throughout the zone. The upper and lower limits of the zone are defined by partitions each composed of a horizontal foraminous divider and an imperforate wall. The imperforate wall extends upwardly and outwardly from the divider and terminates at a wall defining the side limit of the zone. The velocity of the rising gas is highest as it passes through the divider and decreases upwardly therefrom. The gas causes the spheres resting on the divider to move upwardly and outwardly until the gas velocity is no longer capable of keeping the spheres in suspension whereupon the spheres fall downwardly along the side wall and imperforate wall scouring solids precipitated thereon.

3,771,658
BLOOD TRANSPORT MEMBRANE PUMP

Robert C. Brumfield, 73 Emerald Bay, Laguna Beach, Calif.

Filed Oct. 20, 1971, Ser. No. 190,800
Int. Cl. B01d 31/00
U.S. Cl. 210—186 5 Claims

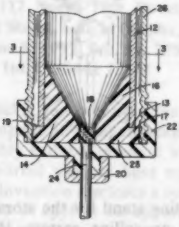


A slow speed drive rotates a cylindrical exchanger pump which operates as a blood oxygenator, and also operates alternatively as a blood dialyser. The pump has a cylindrical rotor permanently mounted in a closely fitting internally cylindrical stator housing. The rotor has a coaxial shaft which is eccentrically disposed parallel to the internal axis of symmetry of the stator housing. Admitted patient blood is pumped as a thin blood film in laminar flow between the rotor and stator as the rotor exterior surface eccentrically approaches the stator surface, and in eddy flow as the rotor surface recedes from the stator surface. The blood is introduced into the pump through a manifolded blood inlet having a longitudinal groove disposed in the inner face of the stator housing, the groove distributing blood to the annular space between the rotor and stator. A second similar blood outlet combination includes a longitudinal groove in the inner stator face, facilitating blood removal from the pump. The rotor has permanent shallow depth passageways disposed in its exterior surface parallel to the rotor shaft axis of symmetry, providing controlled patterned flow of an admitted secondary fluid. The fluid is secured in the rotor passageways by a thin fluid-permeable membrane tightly adjacently covering the passageways. The secondary fluid can be oxygen gas or a liquid dialysate. When oxygenating gas is used, the exchanger pump is a blood oxygenator. When a liquid dialysate is used, the exchanger pump is a blood dialyser. The manifolded and and jacketed stator housing provides heat transfer means for controlling the temperatures of treated-blood of the patient.

3,771,659
BOTTOM CONNECTOR AND FILTER HOLDER FOR CHROMOTOGRAPHIC COLUMN

Douglas S. Fraser, New Paltz, N.Y., assignor to Cenco Medical Health Supply Corporation, Chicago, Ill.

Filed June 7, 1971, Ser. No. 150,588
Int. Cl. B01d 15/08
U.S. Cl. 210—198 C 4 Claims



An improved bottom connector and filter holder apparatus for channeling the fluid contained in a chromotographic column in a uniform manner toward the bottom of such column. An apparatus insertable into the lower end of a conventional round bore chromotographic column, including an upper hollow portion having interior walls converging toward a filter means maintained in position and supported by a lower flanged portion of said apparatus.

3,771,660
CARTRIDGE HOLDER

Verity C. Smith, Dedham, Mass., assignor to Vaponics Incorporated, Plymouth, Mass.

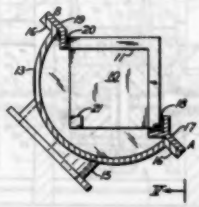
Continuation of Ser. No. 141,743, May 10, 1971, abandoned.
This application Feb. 22, 1973, Ser. No. 334,961
Int. Cl. B01d 27/02
U.S. Cl. 210—232 1 Claim

A cartridge holder for mounting a replaceable cartridge in a fluid treatment system makes connection with the cartridge through a piston-mounted connecting member. The piston rides in a cylinder into which the fluid is passed under pressure; this pressure forces the connecting member against the cartridge.

3,771,661
MULTIPLE FLUID FILTER PLATE ASSEMBLY

Herbert L. Barnebey, Columbus, Ohio, assignor to Barnebey-Cheney Co., Columbus, Ohio

Filed July 13, 1971, Ser. No. 162,120
Int. Cl. B01d 25/08, 50/00, 46/12
U.S. Cl. 210—240 6 Claims



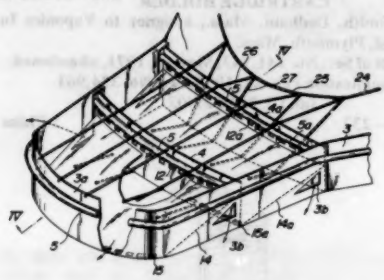
This disclosure pertains to the construction of assemblies of panel-type adsorbers or filters for fluids using components readily standardized to facilitate a variety of available flow patterns assembled in a housing. The adsorber or filter panels may be of any desired shape and area, the most common shape commercially available today being rectangular or square but this disclosure shows in addition circular and hexagonal panels. The assembly includes a pair of seals between the panels and the housing dividing the inlet zone from the outlet zone and a variety of gasket units which may be standardized to permit selections providing any combination of series and/or parallel flow through predetermined numbers of panels.

3,771,662

OIL RECOVERY SYSTEM

Tateo Muramatsu; Kuninori Aramaki, both of Yokohama, and Yoshikazu Kondo, Tokyo, all of Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Apr. 18, 1972, Ser. No. 245,245
Claims priority, application Japan, Apr. 30, 1971, 46/27911
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 5 Claims



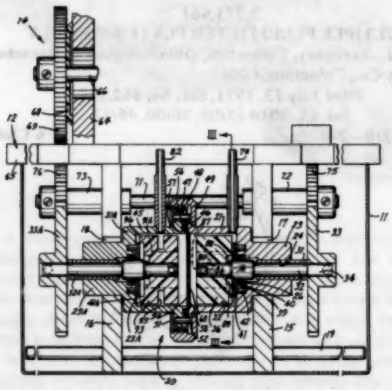
A system for recovering oil spilled on water surface, by sweeping oil films on the water surface into a mobile U-shaped oil fence line. An oil-collecting zone is formed in the U-shaped oil fence line, where all the oil films swept thereby are collected to form a comparatively thick oil film, so that the oil is efficiently removed from that zone.

3,771,663

HIGH SURFACE AREA TO COMPARTMENTAL VOLUME DIFFUSION AND DIALYSIS CELL

Edwin W. Smith, Climax, and Gordon L. Flynn, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 30, 1971, Ser. No. 139,166
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 16 Claims



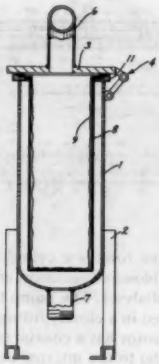
Apparatus for a diffusion cell system wherein variables are under a high level of control. The invention provides a diffusional cell having a high ratio of membrane surface to cell volume and in which the medium containing liquid is caused to sweep the membrane in a directional movement parallel to the plane of the membrane. The invention is based on the appreciation that at least in some instances the dominant variable in the operation of the diffusion cell is the so-called diffusion layer and accordingly uniform and repeatable results are obtained by establishing conditions under which the thickness of the diffusion layer can be accurately controlled.

3,771,664

FILTER SEAL

George H. Schrink, Oshtemo, and Ronald D. Jarman, Brady Township, Kalamazoo County, both of Mich., assignors to Dover Corporation, Kalamazoo, Mich.

Filed July 5, 1972, Ser. No. 269,125
Int. Cl. B01d *35/00*
U.S. Cl. 210—448 6 Claims



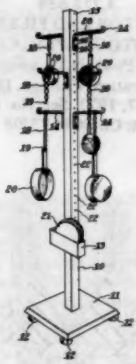
Filter and seal for use therein. In a filter having a mesh basket and a fabric liner contained therein for functioning as a filter medium, there is provided an elastomeric rim for engaging and holding the free edge of the liner. A filter tank and cover are arranged for holding the basket in operating position and for receiving said elastomeric rim between the tank and cover where it acts both to hold the liner similarly in operating position and also as a seal therebetween. Said seal thus comprises a multipurpose component in that it provides a fluid seal between the inside of the housing and the atmosphere, retains the rim of the fabric filter liner and supports same, seals the filtered liquid from the unfiltered liquid and insures that the fabric liner is centered in the mesh basket.

3,771,665

PORTABLE POT STAND

Margaret Potter, Los Angeles, Calif., assignor to Raymond Lee Organization Inc., New York, N.Y., a part interest

Filed Feb. 29, 1972, Ser. No. 230,315
Int. Cl. A47f *5/06, 5/10*
U.S. Cl. 211—107 1 Claim



A vertical mounting stand for the storage of kitchen pots, which is mounted on rolling casters. Horizontal arms are mounted on the vertical standing member at regular intervals, with the upper surfaces of said horizontal arms consisting of a

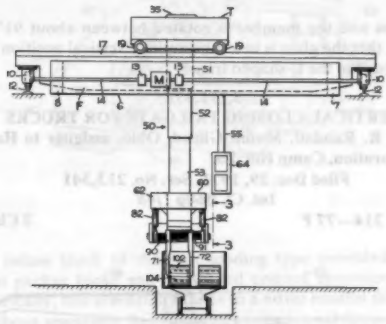
series of adjoining concave cavities to prevent lateral sliding of chained members hanging freely from said arms. The chained members terminate at their lower ends in hooks on which the pots may be hung. An open box is hung on the vertical member for containing pot lids. The horizontal arms may be located at fixed positions on the vertical member, or provision may be incorporated for adjustment of the heights of the horizontal arms on the vertical member.

3,771,666

LOAD GRAB MECHANISM HAVING SEPARABLE ROTATABLE GRAB ARMS

Oscar A. Fournier, Milwaukee, Wis., assignor to Harnischfeger Corporation, Milwaukee, Wis.

Filed June 30, 1972, Ser. No. 268,143
Int. Cl. B66c *17/06, 1/42*
U.S. Cl. 212—21 **15 Claims**



A load grab mechanism for use on a material handling device such as a stacker crane to handle heavy loads having a central opening (such as coils of sheet metal) comprises a support on which a horizontally disposed splined shaft is mounted for rotation by a pair of hydraulic actuators. A pair or grapple arms are mounted on the splined shaft and are slidably movable by another pair of hydraulic actuators to juxtaposed or separated positions. The grapple arms are movable to horizontal or vertical positions by rotation of the splined shaft. A stop block rigidly mounted on the support engages the grapple arms when they are in juxtaposed or partly separated horizontal position to prevent their downward rotation when subjected to a load. In operation, the grapple arms (in either horizontal or vertical position) can engage the ends of the central opening of a horizontally disposed coil. The grapple arms (in horizontal position and juxtaposed) can be inserted into one end of the coil opening. The crane is then operated to move the load to a desired location; whereupon the grapple arms are moved to release the load.

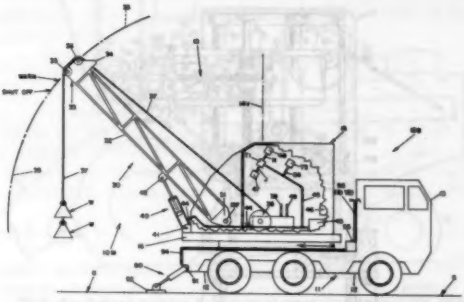
3,771,667

MOMENT MONITORING SYSTEM FOR BOOM-CABLE TYPE CRANES

James M. Becker, 5112 North 78th Street, and William E. Jackson, 3762 Ernst Street, both of Omaha, Nebr.

Filed June 5, 1972, Ser. No. 259,565
Int. Cl. B66c *13/48*
U.S. Cl. 212—39 R **5 Claims**

Cranes, forklift trucks, and other burden manipulation apparatus generally comprise an elongate boom or other burden member of controllably variable moment with respect to the normally stably supported weighty base member of the apparatus. The present invention discloses a moment monitoring system so as to caution or apprise the apparatus operator that the burden member moment has attained an arbitrarily prescribed subcritical-level which is somewhat below the moment critical-level (i.e., the burden moment at which the base member and the entire apparatus is rendered unstable and inoperative). The moment monitoring system generally comprises sensing means of the variable liquid pressure type to sense when the controllably variable burden has attained the selected subcritical-level, said sensing means actuatably extending from the apparatus burden member to the base member thereof and being connected through a hydraulic-



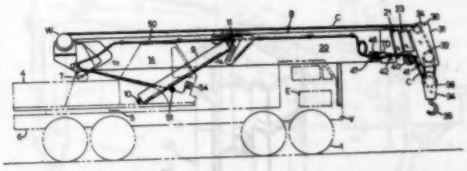
electrical transducer to caution the apparatus operator of said subcritical-level and allow him to take moment-reducing corrective action. If the operator fails to take corrective action at the moment subcritical-level, the apparatus burden manipulation power can be made to automatically shut-off at the burden moment proxcritical-level, thus averting disaster.

3,771,668

TENSION SCALE SYSTEM FOR LIFTING CABLE OF A TELESCOPING BOOM CRANE

Roger L. Johnston, Marion, Iowa, assignor to Harnischfeger Corporation, Milwaukee, Wis.

Filed Apr. 24, 1972, Ser. No. 246,893
Int. Cl. B66c *23/06*
U.S. Cl. 212—55 **2 Claims**



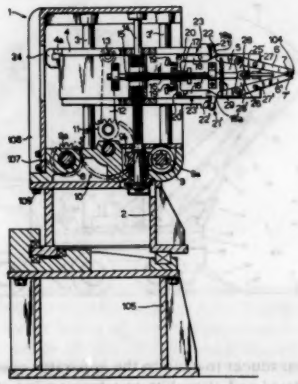
A crane having a telescoping boom which is extendable and contractable to various lengths, which boom has a cable trained thereover for lifting a load. A tension scale system is provided for the cable of the telescoping boom, which system includes a tension dynamometer located on the stationary or base boom section; the lifting cable is connected to a winch, and then extends along the boom and through a reeving system located on the outermost section of the boom; the cable is then trained over a pulley rotatably mounted on the outermost boom section and the cable is then dead-ended on the base section of the boom by being connected directly to the tension dynamometer on the base section. An electrical connection extends from the tension dynamometer directed to the operator's cab so that the load on the cable may be read directly by the operator in the cab of the crane.

3,771,669

TRANSFER ASSEMBLY FOR TRANSFERRING WORKPIECES FROM STATION TO STATION ALONG A PRESS

Franco Maggioni, Turin, Italy, assignor to Innocenti Meccanica S.P.A., Milan, Italy

Filed Jan. 12, 1972, Ser. No. 217,342
Int. Cl. B65g *25/04*
U.S. Cl. 214—1 BB **4 Claims**



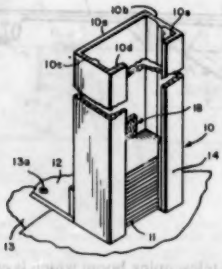
In a transfer assembly for gripping and transferring workpieces from station to station along a press, the guide tracks for the movement of the gripper carrying body are carried by a slide capable of vertical movement in the frame of the finger gripper mechanism actuator means being provided for effecting the vertical displacement of said slide with respect to the frame in order to lift and lower, respectively, the gripper fingers relatively to the press dies.

3,771,670

TICKET STACKER

Nunzio Napoleone, Wellesley, and Alan M. Swett, Milton, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Jan. 3, 1972, Ser. No. 214,827
Int. Cl. B65g *57/30*
U.S. Cl. 214—6 BA **2 Claims**



A ticket stacker comprising a plurality of walls for positioning a ticket therebetween and a plurality of fibers supported by said walls in a manner to hold in a stacked fashion a plurality of tickets forced into the stacker.

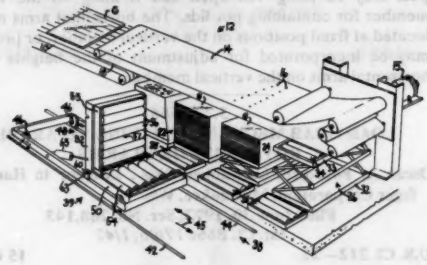
3,771,671

GLASS TURNOVER AND PACKING DEVICE

William P. Cathers, Allison Park, Pa., assignor to PPG Industries Inc., Pittsburgh, Pa.

Division of Ser. No. 76,085, Sept. 28, 1970, Pat. No. 3,675,788. This application May 9, 1972, Ser. No. 251,626
Int. Cl. B65g *57/04*
U.S. Cl. 214—6 C **11 Claims**

An L-shaped member is used for placing horizontal stacks of glass in a substantially vertical position in an L-shaped frame such as a pallet or an L-skid. The glass is transferred from a packing machine by a roller conveyor to the L-shaped member. The L-shaped frame is placed upside down around



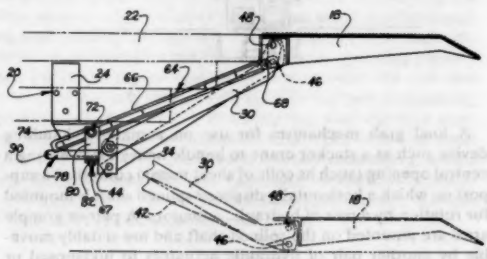
the glass and the member is rotated between about 91° and 100° so that the glass is in a substantially vertical position resting on edge in the L-shaped frame.

3,771,672

VERTICAL CLOSING TAILGATE FOR TRUCKS

Francis R. Randall, Mount Gilead, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.

Filed Dec. 29, 1971, Ser. No. 213,341
Int. Cl. B60p *1/48*
U.S. Cl. 214—77 P **2 Claims**



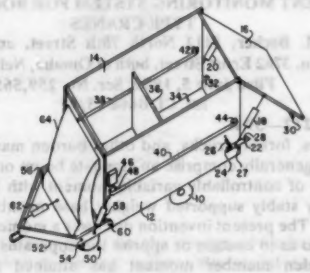
A tailgate type loading apparatus for trucks of the type that includes a loading platform that can be pivoted between a load lifting position and a tailgate position. The apparatus is characterized by a closing arm and associated operating means for selectively locking and releasing said loading platform in the tailgate position.

3,771,673

APPARATUS FOR ASSEMBLING AND STACKING MATERIAL

Eugene Charles Moeller, near Mead, Colo.

Filed Mar. 1, 1972, Ser. No. 230,858
Int. Cl. A01d *89/00*
U.S. Cl. 214—82 **2 Claims**



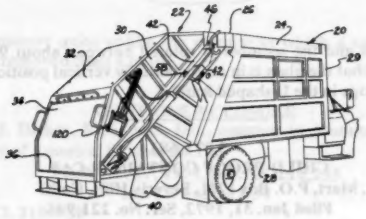
The means for and the method of stacking material, such as fodder, from a mobile device which will pick up the material

in the field and pack it in a stack shape or prism and deliver it to the site where it is to be stored. Upon arrival at the site, the stack will be ejected from the device as a complete stack.

3,771,674
CONTROL SYSTEM FOR REFUSE HANDLING APPARATUS

Richard V. Clucker, 633 N. Cherry St., Kenton, Ohio

Filed Oct. 7, 1971, Ser. No. 187,337
Int. Cl. B65f *3/00*
U.S. Cl. 214—83.3 **2 Claims**

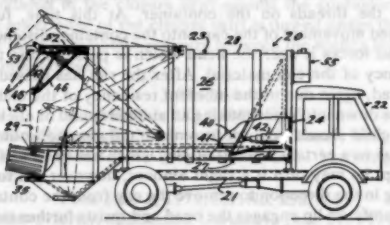


A refuse truck of the rear loading type provided with a novel packer blade and associated control apparatus. More specifically, this invention relates to a novel control means for the above apparatus that eliminates complex valving.

3,771,675
REFUSE COLLECTING VEHICLE

William A. Herpich, Glenn S. Park, both of Galion, Ohio, and George W. Palmer, Durant, Okla., assignors to Peabody Galion Corporation, Galion, Ohio

Continuation-in-part of Ser. No. 28,566, April 15, 1970, Pat. No. 3,661,281. This application Jan. 28, 1972, Ser. No. 221,617
Int. Cl. B65f *3/00*
U.S. Cl. 214—83.3 **3 Claims**

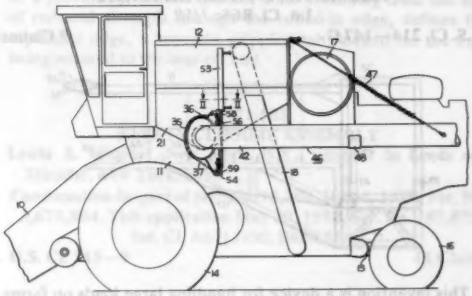


This invention relates to a rear end loader type of refuse collecting vehicle. There is no tailgate and the loading hopper, rather than being in the tailgate, is in the rear of the vehicle body. A packing blade moves refuse from the hopper into the forward portion of the body and in one embodiment may be reversed to sweep refuse from the hopper to a point exterior of the vehicle. A longitudinally movable ejector panel is mounted transversely of the body. During the discharging of refuse from the open rear end of the body the packer blade is in an elevated position and the refuse is discharged by the ejector panel between the elevated packer blade and the hopper. In some embodiments an auxiliary floor is provided in the hopper.

3,771,676
TILTING GRAIN BIN UNLOADER

William G. Ryczek, Kansas City, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed June 8, 1972, Ser. No. 260,740
Int. Cl. B60p *1/42*
U.S. Cl. 214—83.26 **5 Claims**

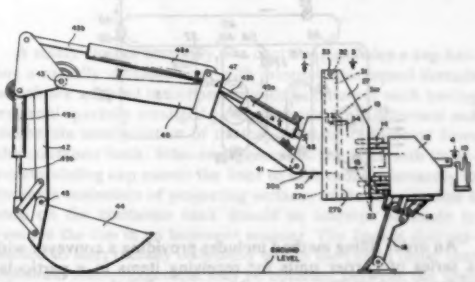


This disclosure relates to a power-operated swingable auger conveyor which can be moved from operative discharge position to an inoperative position without the operator leaving his station on the combine and wherein the bearing races forming the support of such conveyor are constructed of hot rolled steel bar which coact with commercial grade balls to provide an economical mounting.

3,771,677
MATERIAL HANDLING APPARATUS

John S. Pilch, Ware, Mass., assignor to Ware Machine Works, Inc., Ware, Mass.

Continuation-in-part of Ser. No. 22,156, March 24, 1970, Pat. No. 3,653,131. This application Mar. 16, 1972, Ser. No. 235,262
Int. Cl. B66f *9/00*
U.S. Cl. 214—133 **5 Claims**



Material handling apparatus adapted for use with graders, trenchers or backhoes, loaders, lifters and the like which include a material handling implement associated with the remote end of a boom. The apparatus includes a first support positioned in a fixed relation to the ground, a second support which is pivotally connected to the first support and means for moving the second support about said pivotal connection in a substantially horizontal direction relative to the first support. It also includes a third support mounted on the second support and means for moving the third support up and down substantially vertically relative to the second support. One end of a boom is pivotally connected to the third support and means is provided for swingably moving the boom substantially vertically about said pivotal connection to raise and lower the remote end of the boom and the material handling implement which is associated with said remote end.

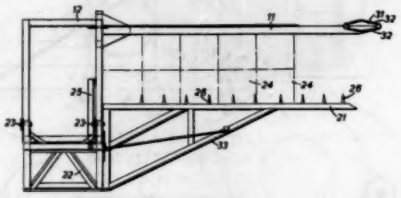
Preferably, all means for moving the elements about their pivotal connections comprise hydraulically operated reciprocating means.

3,771,678

LOADER

Peter Arthur Taylor-Hawkins, Cholsey, near Wallingford, Berkshire, England, assignor to Pattersons Venture Limited, Wallingford, England

Filed Mar. 16, 1971, Ser. No. 124,872
Int. Cl. B66c *1/58*
U.S. Cl. 214—147 G 9 Claims



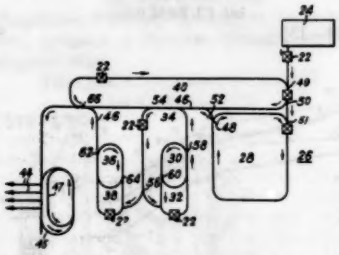
This invention is a device for handling large loads on farms for example banded stacks of bails of hay. A rigid forwardly directed boom co-operates with a gripping boom which can swing down about a horizontal axis to grip the load without an underneath supporting surface.

3,771,679

METHOD FOR FILLING ORDERS WITH A SORTING CONVEYOR

Horst Theml, Klein Ostheim, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt, Germany

Continuation-in-part of Ser. No. 802,938, Feb. 27, 1969, abandoned. This application Nov. 30, 1971, Ser. No. 203,315
Claims priority, application Germany, Feb. 27, 1968, P 15 56 616.2
Int. Cl. B65g *1/04*
U.S. Cl. 214—152 11 Claims



An order filling method includes providing a conveyor with a series of carrier units for receiving items in a particular order, sequentially moving the carriers on the conveyor to supply locations where desired articles are available and transferring same to the carriers, changing the articles available at the supply locations, and again moving the carriers to the supply or article filling locations as often as necessary until all desired articles have been made available, and finally removing filled carriers from the sorting conveyor system.

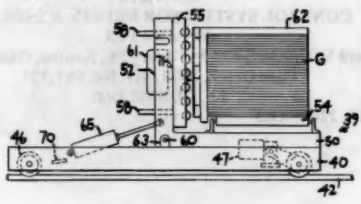
3,771,680

GLASS TURNOVER AND PACKING DEVICE

William P. Cathers, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 76,085, Sept. 28, 1970, Pat. No. 3,675,788. This application May 9, 1972, Ser. No. 251,625
Int. Cl. B65g *47/24*
U.S. Cl. 214—152 3 Claims

An L-shaped member is used for placing horizontal stacks of glass in a substantially vertical position in an L-shaped frame such as a pallet or an L-skid. The glass is transferred from a packing machine by a roller conveyor to the L-shaped member. The L-shaped frame is placed upside down around



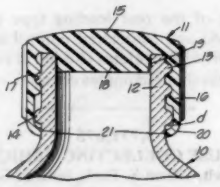
the glass and the member is rotated between about 91° and 100° so that the glass is in a substantially vertical position resting on edge in the L-shaped frame.

3,771,681

CHILD-PROOF CONTAINER CAP

Harry A. Mart, P.O. Box 1241, Beverly Hills, Calif.

Filed Jan. 31, 1972, Ser. No. 221,946
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 5 Claims



A container cap, preferably of molded plastic, includes internal threads for conventional threaded receipt onto a similarly threaded neck of a container which also has a circumferentially extending bead of radial dimensions slightly exceeding those of the threads. The cap includes at its open mouth end an inwardly extending chamfered edge or rim. The cap is threaded onto the container in the usual manner until the inwardly extending rim of the container engages the bead below the threads on the container. At this time, further threaded movement of the cap onto the container distends the rim and forces it over the bead which is possible due to the resiliency of the cap material. After the rim has passed over the bead, again due to the inherent resiliency of the material, it snaps down into place making an audible sound or click.

If a child should now try to remove the cap, he would find that due to a certain amount of play which has been built into the cap, he may turn it a slight amount, however, on further turning in the direction to remove the cap from the container, the chamfered lip engages the bead and resists further turning in that direction. Only a person with the sufficient strength, and who is aware that resistance in turning is to be expected and is therefore not deterred from further turning, can remove the cap.

3,771,682

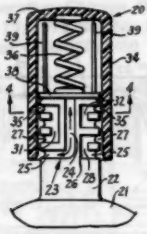
SAFETY BOTTLE CAP

Nicholas G. Chacos, 7805 Old Georgetown Road, Bethesda, Md.

Filed Feb. 15, 1972, Ser. No. 226,607
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 10 Claims

A safety bottle cap in which one or more detents is guided through a labyrinth maze in order to arrive at a point where

the cap can be removed from the neck of the bottle. The construction of the labyrinth is such that the cap must be moved



in a manner quite unlike the manner in which a cap is normally removed from a bottle.

3,771,683

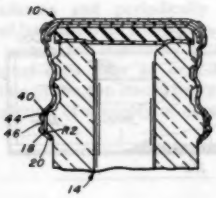
CONTAINER CLOSURE

John J. Dickey, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 27, 1971, Ser. No. 212,235

Int. Cl. B65d *41/34*

U.S. Cl. 215—39 **9 Claims**



A container closure having a top end wall and a depending peripheral skirt which includes an outwardly projecting land with sealing material disposed on its under surface is positioned on a container entrance mouth which has inclined closure retaining means thereon and an outwardly projecting bead below the retaining means, the closure skirt is deformed against the inclined closure retaining means on the container mouth, a substantially downward pressure is applied against the closure skirt overlying the container bead to press the sealing material in the closure skirt against the container bead, and a lower edge of the closure skirt is turned under the container bead to maintain pressure between the sealing liner and the container bead.

3,771,684

METAL TEAR-OFF CAP

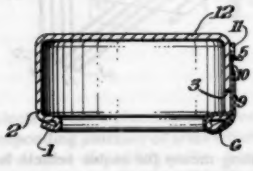
Hermann Ritzenhoff, Marburg/Lahn, Germany, assignor to Gebruder Seidel KG, Metallwarenfabrik, Marburg/Lahn, Germany

Filed June 1, 1972, Ser. No. 258,760

Claims priority, application Germany, June 11, 1971, P 21 28 886.8

Int. Cl. B65d *43/02*

U.S. Cl. 215—46 A **13 Claims**



The invention relates to a metal tear-off cap, the edge of which, separable along a line of reduced strength, securely underlies the rim or ring on the neck or at the mouth of a container, a gripping tab being provided on and projecting beyond the separable edge. The cap is characterized in that the separable edge is rolled-in, in known manner, and is adapted to be pressed in beneath the rim or ring on the neck or at the mouth of the container and in that the line of reduced strength is positioned directly above the rolled-in edge and is interrupted by a cut-away portion which, together with an incision or a previously thinned tear-off zone extending from the line of reduced strength through the rolled-in edge, defines the separable edge, a separate gripping tab, locked on the cap, being secured to the tear-off end.

3,771,685

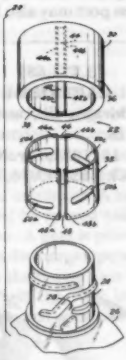
SAFETY CLOSURE ASSEMBLY

Lewis A. Micallef, New York, N.Y., assignor to Leeds and Micallef, New York, N.Y.

Continuation-in-part of Ser. No. 95,300, Dec. 4, 1970, Pat. No. 3,675,804. This application May 30, 1972, Ser. No. 257,872

Int. Cl. A61j *1/00*; B65d *55/02*

U.S. Cl. 215—9 **11 Claims**



A safety closure assembly of a container includes a cap having a radially shiftable liner with internal interrupted threads which are adapted to cooperate with a container neck having external specially arranged guide surfaces. Only informed and deliberate manipulation of the cap permits its removal from the container neck. Inter-engagement of the liner with its accommodating cap causes the liner to shift radially inwardly to increase resistance of projecting surfaces of the liner against a stop on the container neck should an attempt be made to remove the cap in an improper manner. The liner is also permitted to shift radially outwardly within the cap in order that optimum interengagement may be obtained between the liner threads and those present on the container neck in order that a relatively wide range of tolerances may be accommodated on the exterior of the neck finish.

3,771,686

INTEGRALLY MOLDED LOCKING DEVICE

Robert L. Brison, Glendora, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.

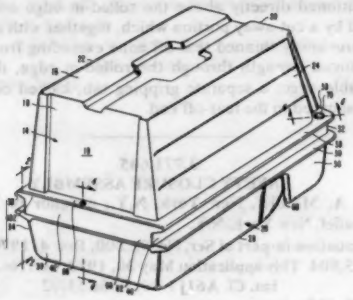
Filed Aug. 11, 1971, Ser. No. 170,753

Int. Cl. B65d *7/00, 43/12*; A01k *1/02*

U.S. Cl. 220—4 R **5 Claims**

An improved lightweight molded container of relatively high load-bearing capacity and easy assembly and disassembly is provided which comprises an upper enclosure slideably engaged with a lower tray through mating tapered flanges. The container is formed from a single hollow container body molded with a divider strip initially interconnecting the

flanges. The divider strip is removed to separate the upper enclosure and lower tray, after which these components are

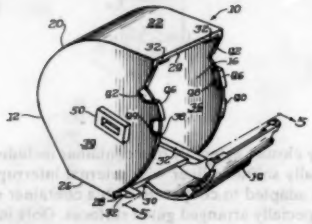


slideably assembled together. Locking means and an integrally formed well with access port may also be provided.

3,771,687
CARTRIDGE

George F. Krtous, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 15, 1971, Ser. No. 198,907
Int. Cl. B65d *43/16, 85/67*
U.S. Cl. 220—31 S 5 Claims



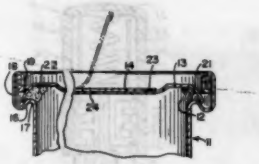
A cylindrically shaped cartridge for retaining a photographic film in coiled form. The cartridge is open-ended and includes a pair of parallel side walls. The edges of each of the side walls define opposing latching channels. The outwardly disposed surface of each of the walls defines a pair of spaced recesses positioned adjacent the edge of the respective wall. A cover is hinged to the cartridge housing and each side of the cover carries a pair of ears for engagement with the recesses. Additionally, formed at each side of the cover is a flange for locking engagement with its respective channel.

3,771,688
VACUUM CONTAINER

Henry E. Frankenberg, Hinsdale, and Harry A. Peyser, Olympia Fields, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Oct. 18, 1971, Ser. No. 190,029
Int. Cl. B65d *51/16*
U.S. Cl. 220—44 R 8 Claims

A pressure sealed container including a container body having an open end bounded by a peripheral lip. A lid having a peripheral portion overlying the lip is sealingly retained thereon by the atmospheric pressure forces. Pull tab means at-

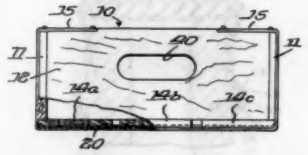


tached to the lid and arranged to vent the container serves to facilitate the removal of the lid.

3,771,689
SHELLS FOR HOLDING SOFT DRINK BOTTLES

Henry Mejan, Jr., 8949 Idlewild, Highland, Ind.

Filed Feb. 7, 1972, Ser. No. 223,968
Int. Cl. B65d *85/62, 1/24, 1/36*
U.S. Cl. 220—69 9 Claims

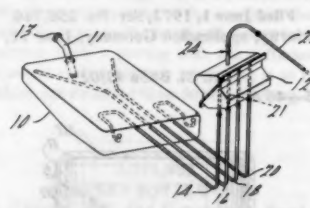


Shells for soft drink bottles are provided with anti-slip members which reduce the shifting of the shells relative to each other when stacked. The anti-slip members are spaced from the bottom sliding surfaces of the shells so that the anti-slip members do not interfere with the sliding function of individual shells on their bottoms.

3,771,690
OVERFILL LIMITING APPARATUS AND LIQUID VAPOR SEPARATOR

William A. Hunter, Royal Oak, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 17, 1972, Ser. No. 235,582
Int. Cl. B65d *25/00*
U.S. Cl. 220—85 VR 8 Claims



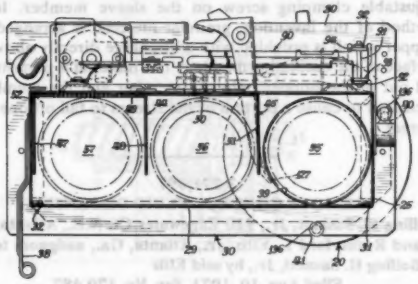
Overfill limiting means for motor vehicle fuel tanks in the form of a normally closed vapor pressure operated valve in a vent line extending from the tank and liquid-vapor separator means having improved construction and function.

3,771,691

DEPLETED STAKE REPLACEMENT APPARATUS FOR CUP DISPENSER

David C. Rockola, Lincolnwood, Ill., assignor to Rockola Manufacturing Corporation, Chicago, Ill.

Filed July 17, 1972, Ser. No. 272,206
Int. Cl. G07f 11/60
U.S. Cl. 221—11 3 Claims



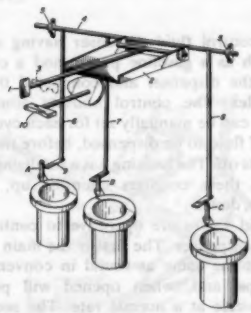
A compact power-actuated assembly for storing paper cups in vertical columns and periodically shifting individual columns thereof laterally over a cup drop mechanism, including a linkage system for selectively actuating the latter to remove individual cups from an over-disposed column or stack; the shifting of the cup stacks being operatively responsive to the depletion of a supply of cups over the cup drop mechanism.

3,771,692

SELECTOR MECHANISM

Bryan Edward Charles Lack, Banbury, and Donald Cramp, Southam nr. Leamington Spa, both of England, assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 30, 1973, Ser. No. 327,888
Int. Cl. B65g 59/06
U.S. Cl. 221—124 4 Claims



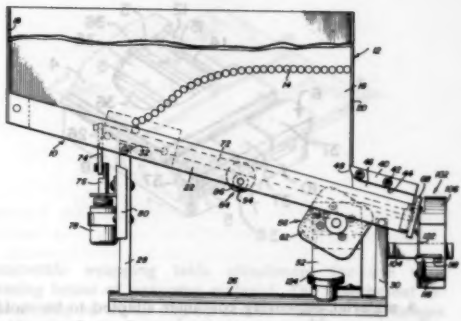
A cup is selected from a plurality of stacks by first aligning one of a corresponding plurality of arms which are at different heights with a desired dispensing point. A cam is rotated to pivot the arms causing only the aligned arm to effect a dispensing engagement with the dispensing point on the selected stack.

3,771,693

VIAL LOADING APPARATUS

James J. Jessick, Tuckahoe Rd., Franklin Township, Gloucester, N.J.

Filed May 17, 1972, Ser. No. 254,056
Int. Cl. B65h 3/06
U.S. Cl. 221—171 15 Claims



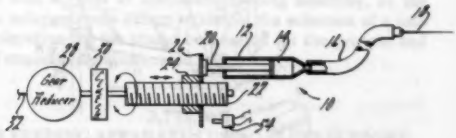
An apparatus to automatically load small cylindrical glass vials into an indexing machine with the open end disposed upwardly and the rounded closed end being disposed downwardly so that the indexing machine may position the vials for filling with a flowable material after which the vial is sealed to form a closed container. A supply hopper having an inclined bottom defined by spaced rails that support the vials in horizontal disposition. A gate is provided to allow discharge of a single vial for each discharge operation with a guide block receiving the vial from the timing gate with the block having a slot therein which directs the vials into an upright position, that is, bottom end down and open end up for positioning in an indexing machine.

3,771,694

INFUSION PUMP

Arthur P. Kaminski, 8662 St. John, Utica, Mich.

Filed July 7, 1972, Ser. No. 269,707
Int. Cl. G01f 11/06
U.S. Cl. 222—70 15 Claims



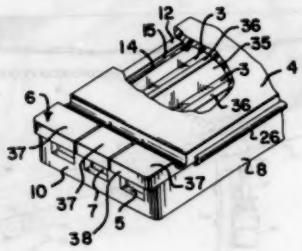
A constant displacement infusion pump for administering medicinal fluid to a patient and means for controllably operating the pump such that the pump is caused to intermittently dispense medicinal fluid with the amount of each dosage dispensation variable in accordance with a first signal and the duration between successive dosage dispensations variable in accordance with a second signal.

3,771,695

MATERIAL DISPENSING CONTAINER

Harold T. Pehr, 3920 W. 96th St., Overland Park, Kans.

Filed Dec. 4, 1972, Ser. No. 311,688
Int. Cl. A47g *19/24*
U.S. Cl. 222—142.4 12 Claims



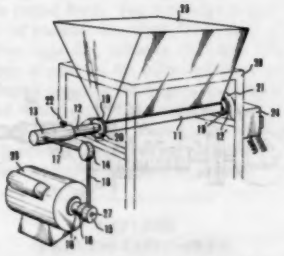
A material dispensing container adapted to be molded in one piece with component parts thereof movable into cooperating and interfitting engagement one with the other to form a closed and sealed container for particulate material such as, for example, salt, pepper, sugar, spice, and the like. The container includes a body portion having a side wall and peripheral side and end walls extending therefrom and a cover member overlying the side wall of the body portion cooperating interfitting portions on the cover member and on the peripheral side and end walls of the body portion effect sealing of the cover member in position. One of the peripheral walls of the body portion has surfaces defining a plurality of material dispensing passages therethrough and portion of the cover member forms a closure member which is integrally and hingedly connected to the cover member and has tongue portions extending therefrom to close and seal a respective one of the dispensing passages when in closed position.

3,771,696

APPARATUS AND METHOD FOR SPRAYING OR SPRINKLING GRANULAR MATERIAL

Yoshitomo Yoshioka, 23-23 2-chome, Naka Ikegami, Ohta-ku, Tokyo, Japan

Filed Dec. 28, 1971, Ser. No. 212,956
Claims priority, application Japan, Feb. 27, 1971, 46/9813
Int. Cl. B67d *3/00*
U.S. Cl. 222—199 4 Claims



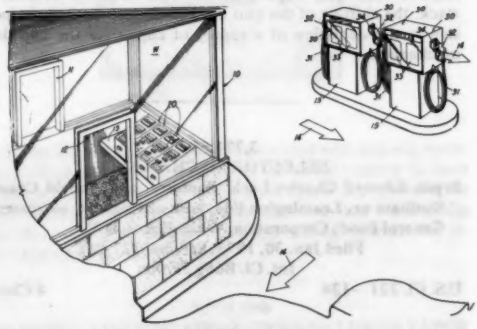
A device for spraying or sprinkling granular material comprising a receiving member, for example a bar or plate, having a receiving recess preferably a V-shaped groove on its top surface onto which material is directed from a hopper in a continuous stream. The receiving member is oscillated through a defined amplitude of oscillation in order to cause the material to fall off at least one edge of the receiving member and be distributed in a uniform sprinkling pattern for example for applying it onto foodstuffs or applying it in a uniform stream. The receiving member is oscillated by a rotatable driving member having an eccentric drive which oscillates a connecting crank member or buffer which in turn oscillates a sleeve member which is adjustably secured to a shaft of the receiving member. Changes in amplitude may be effected in accordance with the angle at which the sleeve member is engaged with the shaft of the receiving member and this may be adjusted by means of an adjustable clamping screw on the sleeve member. In the method of the invention, granular material is arranged in a hopper which is provided with a discharge directly above the surface of the oscillating member. The material is permitted to fall out of the hopper onto the member and the member is oscillated to cause a portion of the stream to fall off one edge thereof.

3,771,697

REMOTE CONTROL FLUID DISPENSER

Bolling H. Sasnett, Jr., 910 Edgewater Ct. N.E., Atlanta, Ga., and Rutherford L. Ellis, Jr., Atlanta, Ga., assignors to said Bolling H. Sasnett, Jr., by said Ellis

Filed Aug. 10, 1971, Ser. No. 170,487
Int. Cl. B67d *5/30*
U.S. Cl. 222—16 6 Claims



A remote control fluid dispenser having a conventional dispenser, such as a gasoline pump, and a control housing remote from the dispenser and connected thereto through electrical cables. The control housing contains a preset counter which can be manually set for each cycle to prescribe the quantity of fluid to be dispensed, before the dispenser automatically cuts off. The housing has a totalizing counter and a sales counter, these counters counting up, as the preset counter counts, down.

Two solenoid valves are operative to control the flow of fluid from the dispenser. The first is the main solenoid valve which is about the same as found in conventional electric gasoline pumps, and, when opened will permit delivery through the nozzle at a normal rate. The second is a slow delivery or solenoid valve which when open will permit only a very limited delivery of fluid through the nozzle.

Initially, both valves are opened when delivery starts. When, however, the preset counter counts down to a first prescribed amount, i.e., five cents, cam means on the counter causes the main solenoid valve to close and when it counts down to a lesser amount, i.e., zero cents, the cam means then causes the slow delivery valve to close.

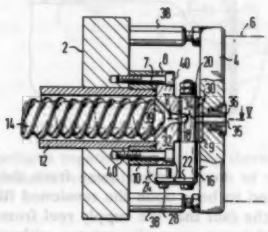
Emergency and automatic-manual switches are also contained on the panel.

3,771,698

INJECTION MOLDING MACHINE

Erwin Loichen, Gallenbach, Germany, assignor to Zargun Fabrik fur Spezialkunstoffmaschinen GmbH, Aichach, Germany

Filed Nov. 24, 1971, Ser. No. 201,703
Claims priority, application Germany, Sept. 10, 1971, P 21 45 364.5
Int. Cl. G01f 11/22
U.S. Cl. 222—413 15 Claims



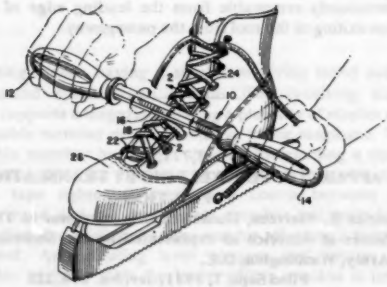
The extrusion head of an injection molding machine having a cylinder and a screw axially secured in the cylinder is equipped with a closure that includes a valve pin rotatable about an axis perpendicular to the cylinder axis and formed with an external notch which connects the cylinder cavity with the extrusion nozzle in the open position, and is open toward the cylinder interior in the closed position so that the resin composition cannot congeal in the valve between successive molding operations.

3,771,699

LACE TIGHTENER

Joseph G. Thibeault, 104 Faywood Ave., East Boston, Mass.

Filed June 8, 1971, Ser. No. 150,979
Int. Cl. A47j 51/02
U.S. Cl. 223—113 2 Claims



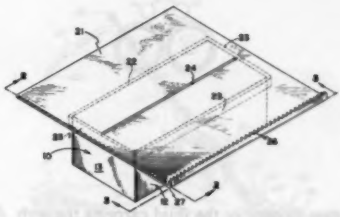
A lace tightener having a rotatable shank with handles at either end and a hook in the center to seize the laces as they are wrapped around the shank and tightened.

3,771,700

WRAPPING TABLE ATTACHMENT FOR DISPENSING BOXES

Ernest J. Garr, 3587 Powell Drive, Lafayette, Calif.

Filed Aug. 14, 1972, Ser. No. 280,402
Int. Cl. B26f 3/02
U.S. Cl. 225—39 4 Claims



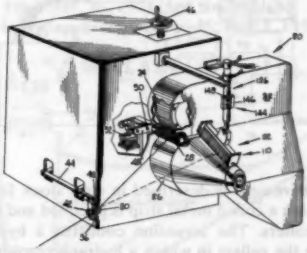
Removable wrapping table attachment for use with dispensing boxes of wrapping material. The attachment includes a table on which objects can be wrapped and flanges which engage the box to hold the attachment in place.

3,771,701

APPARATUS AND METHOD FOR ACCELERATING STRANDS

Jack Laurence Brunk, Toledo, and Eric Joseph Brosch, Grand Rapids, both of Ohio, assignors to John-Manville Corporation, Greenwood Village, Colo.

Filed Oct. 26, 1972, Ser. No. 300,941
Int. Cl. B65h 17/12
U.S. Cl. 226—1 13 Claims



A strand feeding assembly is provided with a strand starting cone and cone idler which cooperate to accelerate a strand introduced between the idler and cone to the proper speed for the strand feeding assembly. The cone is either affixed to and rotates with a roller of the strand feeding assembly, or the cone is independently driven to enable the selection of a rate of acceleration for the strand best suited for the process and type of strand being accelerated.

3,771,702

WEB FEEDING APPARATUS USING FLUID SUPPORT

Takaaki Matsumo, Ashigara, and Takeshi Nakamura, Minami, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 12, 1972, Ser. No. 297,159
Claims priority, application Japan, Oct. 12, 1971, 46/80392
Int. Cl. B65h 17/32
U.S. Cl. 226—7 10 Claims

Apparatus for supporting and feeding a web material by impinging a flowing fluid against the web material comprising rotatable fluid ejection cylinders on opposing sides of the web,

the cylinders having means to restrict the flow of the fluid so as to impinge on the web. Suction means are provided

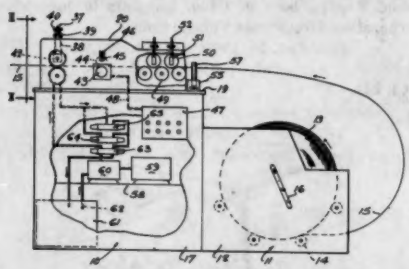
downstream to remove the fluid carrying the web. A plurality of cylinder/suction units comprise the web carrying apparatus. A process for feeding a web using the described apparatus.

3,771,703

HYDRAULIC ROTARY STRIP STOCK FEEDER

Andrew R. St. Denis, 3541 Rankin Ave., Windsor, Ontario, Canada

Filed Feb. 29, 1972, Ser. No. 230,353
Int. Cl. B65h *23/22*
U.S. Cl. 226—42 **11 Claims**



An improvement is described in strip stock feeders of the type in which a coiled metal strip is uncoiled and advanced by pressure rollers. The invention concerns a hydraulic drive system for the rollers in which a hydraulic motor is powered by a hydraulic pump via a conduit system. This system includes two parallel flow paths which permit different amounts of fluid to pass through the motor, thereby operating the motor at different speeds. Controllable valves determined which paths the fluid follows or stop all fluid flow through the system thereby stopping the motor.

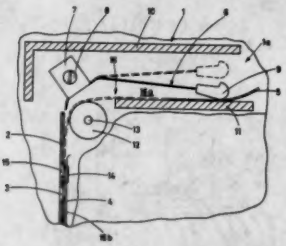
3,771,704

FILM GUIDE MEANS FOR CINEMATOGRAPHIC APPARATUS

Wolfgang Riedel, Winnenden, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 9, 1972, Ser. No. 233,081
Claims priority, application Germany, Mar. 24, 1971, P 21 14 242.7
U.S. Cl. 226—89 **9 Claims**

A motion picture projector wherein the means which guides the leader of motion picture film during threading from the inlet opening into the range of the claw pull-down includes a resilient braking member which normally bears against a stationary guide member adjacent to the inlet opening. When the leader of a fresh film is inserted into and through the inlet opening, the leader lifts the braking member off the stationary guide member and the braking member thereupon prevents withdrawal of the leader due to its tendency to curl by biasing the leader against the guide member. Once the leader reaches the pull-down so that the latter begins to transport the film in stepwise fashion, the resulting tensioning of the film causes the



braking member to move further away from the stationary guide member and to bear upon the tensioned film so as to compensate for the fact that the supply reel from which the film is being withdrawn normally rotates without stoppage while the pull-down transports the film stepwise.

3,771,705

PAPER TAPE LOADING TOOL

John D. Thomas, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 2, 1973, Ser. No. 320,545
Int. Cl. G03b *1/56*
U.S. Cl. 226—92 **14 Claims**

A roll paper tape loading tool is provided for use in multi-tape printing machines and the like wherein the leading edge of a fresh roll of paper tape may be supported for convenient and facile insertion into and through the passageway leading to and extending beyond the print-receiving position, such tool serving to provide curl-removing rigidity to the leading edge of the tape during its insertional excursion and being also conveniently removable from the leading edge of the tape upon exiting of the tool from the passageway.

3,771,706

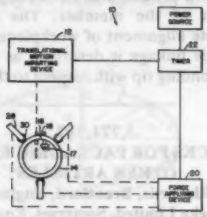
APPARATUS FOR WELDING BY TRANSLATIONAL FRICTION

Charles H. Martens, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 7, 1971, Ser. No. 178,225
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 **6 Claims**

Apparatus for welding surfaces of a workpiece or workpieces together by translational welding. The apparatus includes clamping members disposed adjacent the surfaces to be joined, and a member capable of transmitting translational motion to one or both of the surfaces to be joined is secured to

the clamping bars. Locating supports are disposed in spaced relation to the workpiece for application of a force thereto to

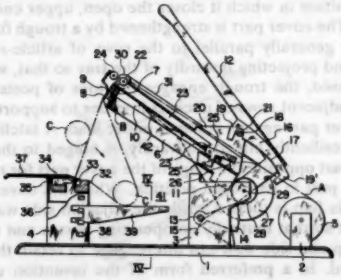


press the surfaces together for welding thereof responsive to the translational movement.

3,771,707
BINDING DEVICE

Mitsuo Nishikawa, Takasaki-shi, Japan, assignor to Max Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 211,894
Claims priority, application Japan, Dec. 31, 1970, 45/128365; Jan. 12, 1971, 46/605; Jan. 27, 1971, 46/2724; June 30, 1971, 46/57273; Sept. 18, 1971, 46/72721
Int. Cl. B25c 5/02
U.S. Cl. 227—76 **10 Claims**

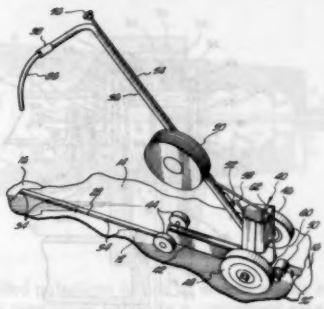


A binding device having a stapler receiving stand and a binding stand mounted on a base. The receiving stand pivotally supports a magazine holding a plurality of staples and a depressable member movable relative to the magazine. The depressable member has means thereon for ejecting a staple from the magazine, for cutting a tape, and for removing tape chips. A tape tightening mechanism coacts between the receiving stand and the depressable member and includes a pair of rollers for guiding the tape and for effecting a tightening thereof. An actuating lever engages and rotates the depressable member with the lever, which rotation is interrupted temporarily before binding occurs. A rotation transmission mechanism coacts with the lever to transmit the turning motion of the lever to one of the guide rollers during said interruption to withdraw the excess tape. The binding stand is provided with a stable bending bench, a mechanism for holding the front tip of the tape, and a placement stand on which an article can be bound in a stable condition.

3,771,708
METHOD AND APPARATUS FOR AUTOMATICALLY STAPLING TAPE

Frank De Nicola, and G. Edward Vallender, both of Visalia, Calif., assignors to Berryfast, Inc., Tulare, Calif.

Filed Nov. 22, 1971, Ser. No. 201,034
Int. Cl. B27f 7/22
U.S. Cl. 227—111 **8 Claims**

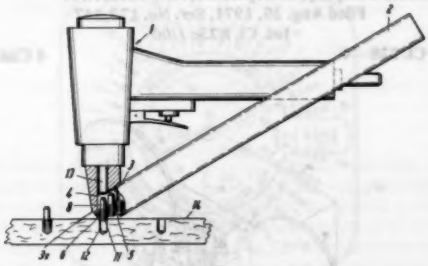


Sheet material is fastened to a base by means of a tape which is extended along the sheet material. Staples are periodically and automatically driven through the sheet material into the base so as to enclose the tape, thereby fastening the tape and the sheet material to the base. The tape is in the form of a continuous strip.

3,771,709
SETTING OF WALL ANCHORS AND ANALOGOUS OBJECTS

Rene Breschinsky, Industriestrasse 26, Sennestadt, Germany

Filed Nov. 30, 1971, Ser. No. 203,493
Claims priority, application Germany, Dec. 2, 1970, G 70 44 506.6
Int. Cl. B25c 1/00
U.S. Cl. 227—120 **5 Claims**

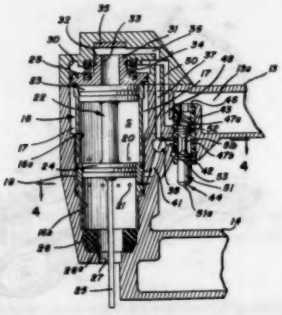


A device for setting wall anchors and analogous objects has a head portion provided with an exposed surface, and an elongated magazine portion connected with the head portion and extending rearwardly away from the general plane of the exposed surface, being inclined thereto. Guided in an internal guide passage of the magazine portion is a strip of objects to be set, the strip having a substantially step-shaped configuration and the objects being arranged in longitudinal parallelism. The surface is provided with a channel which is open at the surface and also at the guide passage so that the strip will feed under the influence of gravity towards the channel and the respectively leading object will be located in the channel partially projecting beyond the surface whereas the following object will be located laterally adjacent to it.

3,771,710
PNEUMATICALLY POWERED FASTENER-DRIVING TOOL

Garry R. Perkins, Cary, and Laurel I. Mitschelen, Palatine, both of Ill., assignors to Spotnails, Inc., Rolling Meadows, Ill.

Filed Sept. 27, 1971, Ser. No. 183,979
Int. Cl. B25c *1/04*
U.S. Cl. 227—130 **7 Claims**



A pneumatically powered fastener-driving tool is provided which includes a manually selective automatic recycling means. The speed of recycling may be adjusted as desired, and the exhausted compressed air is deflected so as to protect the operator, as well as the workpiece.

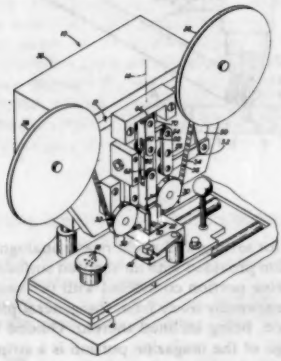
ERRATUM

For Class 228—2 see:
Patent No. 3,771,706

3,771,711
COMPLIANT BONDING

Joseph N. Lesyk, Allentown; David P. Ludwig, Whitehall, and Jack J. Monahan, Allentown, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 20, 1971, Ser. No. 173,447
Int. Cl. B23c *1/00*
U.S. Cl. 228—4 **4 Claims**

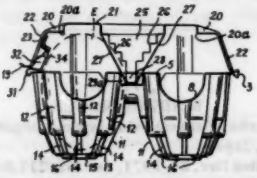


Compliant bonding of successive beam-lead semiconductor devices to successive metallic patterns on substrates is accomplished with a bonding apparatus that uses an indexable compliant member. A bonding head of the apparatus is provided with a single movable tip which disengages from the compliant member during indexing of the member. The movable tip engages with a portion of the compliant member that is suspended between two drive sprockets when it is desired to perform a bonding operation. The engagement of the tip with the compliant member produces tension in the member. The tension results in a precise and flat configuration within the engaged portion of the member. The flat configuration enhances accurate alignment of workpieces to the compliant member. A toggle linkage is described as a desirable system for moving the bonding tip with respect to the head.

3,771,712
BOXES OR PACKS FOR PACKAGING EGGS; FRUIT OR OTHER ARTICLES

Raymond Keith Richards, Brentford, England, assignor to Autobars-Vendabeka Limited, Somerset, England

Filed Feb. 28, 1972, Ser. No. 229,843
Claims priority, application Great Britain, Mar. 2, 1971, 5849/71; Sept. 21, 1971, 43589/71
Int. Cl. B65d *1/00, 81/00*
U.S. Cl. 229—2.5 **5 Claims**



A box or pack for packaging eggs, fruit or other articles is formed as a one-piece moulding of plastics material and comprises a base part having rows of article-receiving pockets, and a cover part of tray-like shape, the base and cover parts being hinged together along mutually adjacent rims so that the cover can be folded about the hinge from an open position to a closed position in which it closes the open, upper ends of the pockets. The cover part is strengthened by a trough formed in the cover generally parallel to the rows of article-receiving pockets and projecting inwardly of the tray so that, when the box is closed, the trough engages the tops of posts formed between adjacent rows of pockets in order to support the top of the cover part against collapse under load. A latching flap, which is resiliently biased outwardly, is hinged to the rim of the base part opposite the hinge of the cover part for retaining the cover part in its closed position. When the cover part is closed, this flap is tucked inside the adjacent side wall of the cover part so that mutually co-operating bosses and recesses on the flap and side wall can interengage to retain the cover part closed. In a preferred form of the invention used for packaging eggs, the package comprises two such boxes formed as an integral unit and joined together at mutually adjacent ends. The plastic webs interconnecting the ends of the two boxes are formed with perforations so that the package can be readily split into its two component boxes.

3,771,713
PARTITIONED TRAY HAVING TABS, FOR PIES AND THE LIKE

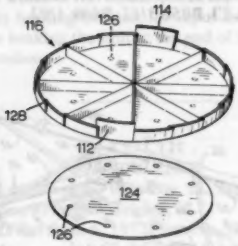
Brian Y. Davidson, 34 Pineway Blvd., Willowdale, Ontario, Canada

Continuation-in-part of Ser. No. 26,389, April 7, 1970, abandoned. This application Dec. 11, 1970, Ser. No. 97,286
Int. Cl. B65b *25/10*
U.S. Cl. 229—27 **7 Claims**

A tray for pies such as pizza, fruit, meat or cream pies. The tray is divided into a number of equal size sectors by double partition walls, with a pie portion in each sector, so that a user need not cut the pie to take a portion, and so that when the pie is heated, the portions will not coagulate. Individual tray sectors each containing a pie portion, can be removed from the

remainder of the tray (and then thawed or heated individually) by cutting the tray along the tops of the partition walls.

The tray is formed by cutting a central hole in a generally circular blank, drawing the blank upwardly at the location of



the partition walls, and forcing the partition walls inwardly as they are being formed, until their inner ends meet to close the central hole. A rim is then formed if desired.

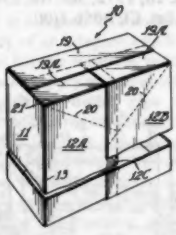
Two tabs are attached at diammetrically opposed edges of the tray. When the tabs are pulled, the tray opens up into the form of a blank, separating the pie pieces.

3,771,714

EASY PACKING DEEP CONTAINER

Tony D. Faires, Chattanooga, Tenn., and Larry M. Balkin, Decatur, Ga., assignors to Container Corporation of America, Chicago, Ill.

Filed Apr. 10, 1972, Ser. No. 242,625
Int. Cl. B65d *5/16, 5/72*
U.S. Cl. 229—37 R **1 Claim**



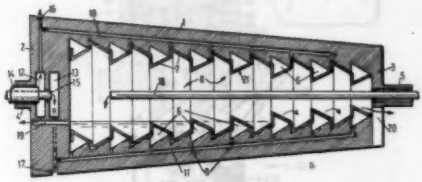
An easy packing deep container is made from a cut and scored blank of paperboard or the like and comprises opposed pairs of main panels connected along lines of fold to define a tube. One of the main panels is split and is composed of half panel sections part of which are overlapped and joined by gluing or the like. The unjoined parts have scores commencing at the point where they are joined and terminating at corners thereof to define triangular shaped subpanels which may be folded out of the way for loading of the container. Closure flaps extend from one end of the main panels and are foldable to position to define an end closure for the tube. Other closure flaps extend from the opposite edges of the split main panel and are foldably connected thereto to define a pair of minor closure flaps. The triangular shaped subpanels are foldable back into a common plane to complete the loading of the tube, and the other closure flaps are thereafter foldable into overlapping and secured relationship with the other closure flaps after completing of the loading of the tube.

3,771,715

SELF-CLEANING CENTRIFUGAL SEPARATOR

Martin Baram, Brondy Strand, Denmark, assignor to Escher Wyss Aktiengesellschaft, Zurich, Switzerland

Filed Nov. 23, 1971, Ser. No. 201,314
Claims priority, application Denmark, Nov. 24, 1970, 5989
Int. Cl. B04b *1/00*
U.S. Cl. 233—27 **25 Claims**



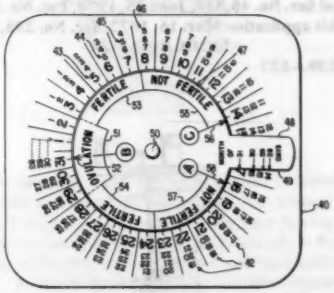
Fluid controlled pulsations of one or several elastic and or pliable annular membrane linings in a centrifugal separator, preferably of the "Decanter"-type, to transport precipitated sludge and solids to ejection openings.

3,771,716

FERTILITY CALCULATORS

Elias Sanchez, 507½ Fulton St., Elizabeth, N.J.

Filed Aug. 16, 1971, Ser. No. 172,004
Int. Cl. G06c *3/00*
U.S. Cl. 235—85 FC **2 Claims**

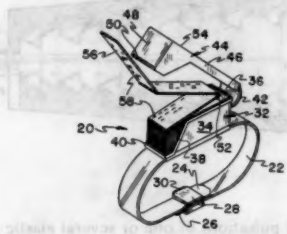


A fertility calculator including two members, one being larger than the other and having the dates of the month arranged in four concentric rings, each date number occupying the same angular space as each other, and each ring representing months of different lengths. The second member is mounted concentrically with respect to the rings and is rotatable, the second member being essentially circular and having a projection with an edge calibrated in month lengths. The second member is movable to place the calibrated edge adjacent the day on which the most recent menstrual period commenced, this being the only setting necessary. Fertile and non-fertile periods based on the normal menstrual cycle can then be read on the first member adjacent the calibrated sectors of the second member.

3,771,717
PATIENT, OBJECT DATA CORRELATION METHOD

Clifton Eugene McDermott, Salt Lake City, and Darrell B. Steinicke, Bountiful, both of Utah, assignors to Bio Logics, Inc., Salt Lake City, Utah

Division of Ser. No. 875,141, Nov. 10, 1969, Pat. No. 3,660,916. This application Jan. 27, 1972, Ser. No. 222,420
Int. Cl. G06r 19/00
U.S. Cl. 235—61.12 R 2 Claims



A method wherein identification band has a receptacle for receiving a series of detached or detachably joined labels and dispensing structure for dispensing the labels one at a time. The method includes providing a plurality of labels with indicia including coded identification and placing the lables in an indentification band. When the band is attached to a patient and object or the like, the labels may be serially detached and/or removed from the band, and affixed to a secondary object to identify the object as relating to the patient.

3,771,718
WATER COOLING METHOD AND APPARATUS

William F. Stowasser, and Keith A. Miller, both of Allentown, Pa., assignors to Air Products and Chemicals Inc., Allentown, Pa.

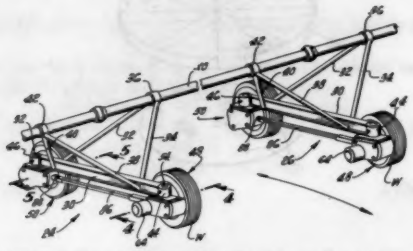
Division of Ser. No. 49,859, June 25, 1970, Pat. No. 3,672,182. This application Mar. 16, 1972, Ser. No. 235,173
Int. Cl. B05b 1/24
U.S. Cl. 239—133 6 Claims

Water is cooled by the direct injection thereinto of liquid nitrogen. Preferably, heat is applied in the vicinity of the injection zone and preferably the injection of the liquid nitrogen is intermittent with inert gas being injected when liquid nitrogen is not injected. The application of the heat and the injection of the gas eliminates the tendency of the injector to be plugged by ice formation.

3,771,719
WHEEL MODULES FOR OVERHEAD TRACKING SPRINKLER SYSTEM

Vito Raso, Buena Park, and George R. Blackmore, Los Alamitos, both of Calif., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 9, 1971, Ser. No. 132,679
Int. Cl. B05b 3/12; B60k 1/02
U.S. Cl. 239—177 11 Claims

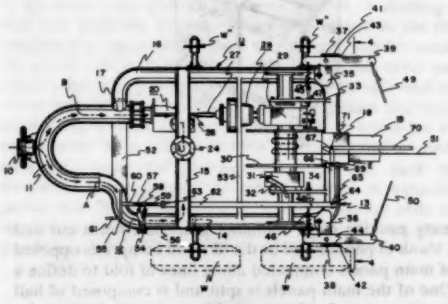


A horizontal sprinkler beam is supported by a plurality of ground tracking units. Each ground tracking unit includes two individual wheel modules. Various interchangeable wheel modules make possible various combinations for each ground tracking unit—simple gear motors, variable ratio drives, gear reduction mechanisms having provisions for connection to the companion drive module, and coasters. Each drive and gear module may be provided with a quick disconnect device to permit towing. Moreover, if the beam tracks circularly, each module may be provided with means for turning the wheel axes 90° whereby the towing may be endwise.

3,771,720
WINCH DRIVEN WATER SPRAY IRRIGATION DEVICE

Burr Courtright, La Grande, Oreg., assignor to CH_2O Inc., La Grande, Oreg.

Filed Sept. 18, 1972, Ser. No. 290,100
Int. Cl. B05b 3/00
U.S. Cl. 239—189 11 Claims



Agricultural irrigation apparatus comprising an improved fluid driven prime mover which relies upon a self-contained winch for drawing the apparatus via a winch cable to a selected deadman location. The structure is highly reliable in use since the same, in a preferred form of the invention, incorporates an essentially rectangular frame fabricated in a manner sufficient to accommodate heavy hose connections and high pressure inputs. In a preferred embodiment water is conducted through a portion of the frame proper and through bracing structure associated with the upright distribution system. The winch employed is constructed for selective free-spooling such that the cable may be freely unspooled from the winch for connection to a deadman location. Means are pro-

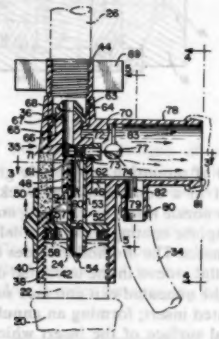
vided for shunting a selected amount of water flow from the water turbine or equivalent means incorporated, this so as to control the drive of the winch via the water turbine as well as, in effect, terminate such drive. Means are also provided for releasing and also for setting the brakes of the wheels upon termination of a run automatically and, simultaneously, terminating the winch drive. Brake means are supplied as well for automatically braking the unit for input water pressure surge as well as for braking the unit at the end of its run, all in an automatic operation.

3,771,721

NEBULIZER

Edward Van Amerongen, Wilmette, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Filed Sept. 6, 1972, Ser. No. 286,692
Int. Cl. A61m *11/02*
U.S. Cl. 239—338 **10 Claims**



A water supply is adapted as a source for nebulized liquid through the agency of an adapter which couples oxygen pressure to a container for the water. A venturi within the adapter draws from the water supply and directs highly atomized water and oxygen through an outlet pipe on the adapter. The adapter is also provided with means of providing air to the outgoing stream in order to dilute the oxygen content.

A depending suspended ball is disposed in the path of flow downstream of the venturi in a chamber. It traps water particles which should not pass to the patient. The water particles or drops collected in the chamber are drained into a means located at the bottom of the chamber. Means is located along and at the bottom to assist in collecting the liquid water and conducting it to the drain means. Conduit means is fluidally connected to the drain means and to the container for both carrying back the collected liquid water and for stabilizing pressure in the container by providing gas replacement for water removed from the system.

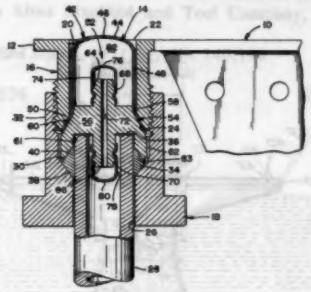
3,771,722

ADAPTER FOR CONVERTING LOW PRESSURE PILOT BURNER FOR USE WITH HIGH PRESSURE GAS SUPPLY

Louis P. Morris, Garden Grove, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 3, 1972, Ser. No. 240,558
Int. Cl. B05b *1/00*
U.S. Cl. 239—590.3 **15 Claims**

An adapter for converting a standard low pressure pilot burner for use with a high pressure gas supply including a fitting adapted to engage tubing for supplying the gas under high pressure and an orifice member of the pilot burner, the fitting carrying a pair of pressure reducing orifices interconnected by an elongated passage through the fitting.

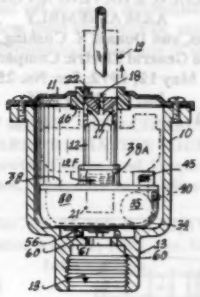


3,771,723

ROTARY SPRINKLER HEAD

Harry Edward Ray, 3244 Mel Avenue-Apt. 10, Las Vegas, Nev.

Filed June 22, 1972, Ser. No. 265,348
Int. Cl. B05b *3/04, 15/10*
U.S. Cl. 239—206 **19 Claims**



A rotary sprinkler head for underground installation with pop-up nozzle and improved ball-impact type of motor including a high-buoyancy plastic motor chamber having a hemispherically curved ball race to fit substantially a half or the hemisphere of the driving ball for maximal and uniform drive and wear. A novel throttle means permits adjustment by screw-driver turning of the nozzle without removal or entry into the head, and means is provided whereby the nozzle can be freed from stuck condition by similar turning of the nozzle. Self-scavenging means is provided for the shrouded type of nozzle to continuously flush out sand and sludge. Novel water jet means provides a pulsed spray.

3,771,724

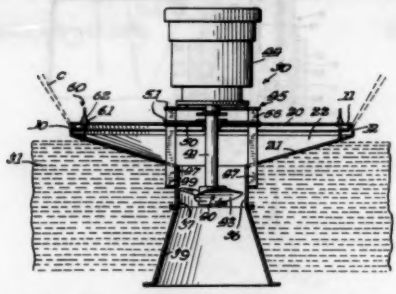
APPARATUS AND PROCESS FOR SPRAYING LIQUIDS

Clark B. Rose, La Grange, Richard B. Kelley, and Richard B. Ravitts, both of Rockford, all of Ill., assignors to Richards of Rockford, Ill.

Filed July 19, 1972, Ser. No. 273,181
Int. Cl. F23d *11/04*
U.S. Cl. 239—221 **26 Claims**

A pressure nozzle for spraying liquid as droplets substantially free from droplets of sizes that will form a mist which will

drift. A first liquid sheet is conducted along a wall that extends beyond the nozzle orifice. A second liquid sheet intersects the



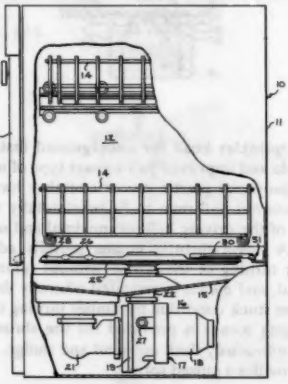
first sheet on the wall, and the resultant stream, which is discharged into the atmosphere, disrupts into droplets in a controlled manner.

3,771,725

WASHING APPLIANCE HAVING AN IMPROVED SPRAY ARM ASSEMBLY

Thomas E. Jenkins, and Donald S. Cushing, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed May 12, 1972, Ser. No. 252,824
Int. Cl. B05b *3/06*
U.S. Cl. 239—243 **10 Claims**



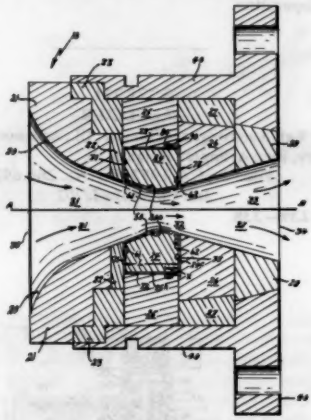
A dishwashing machine has a rotatable spray arm with a repositionable fluid distributor disposed thereon for discharging washing fluid over articles being washed in the machine's wash chamber. The distributor is provided with a plurality of discharge ports for directing streams of fluid therefrom in a predetermined pattern, and repositioning the distributor on the spray arm during operation of the applicance effects reorientation of the streams to provide more uniform and thorough fluid distribution throughout the chamber.

3,771,726

FREE-FLOATING ROCKET NOZZLE INSERT

Alan J. Mikeska, Annandale, Va., assignor to The United States of America as represented by the Secretary of The United States Air Force, Washington, D.C.

Filed May 11, 1970, Ser. No. 48,760
Int. Cl. B63h *11/00*
U.S. Cl. 239—265.11 **1 Claim**



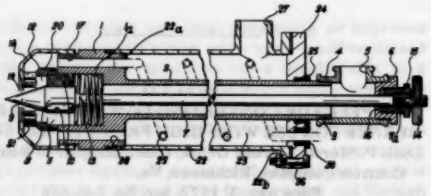
A method of mounting a pyrolytic graphite coated rocket nozzle insert in a composite-type rocket nozzle to prevent failure of the nozzle insert by cracking and delamination of the pyrolytic graphite coating which is solely on the internal surface of the insert. The method includes the steps of forming a circumferential groove in the uncoated entrance and face surface and in the uncoated exit end face surface of the pyrolytic graphite coated insert; forming an annular slot in the longitudinal internal surface of the insert which is next adjacent to the uncoated longitudinal surface of the pyrolytic graphite coated insert; coating, with a layer of silicon grease, the surfaces, except the pyrolytic coated surface, of the pyrolytic coated insert; seating an O-ring within the annular slot; and, positioning the pyrolytic graphite coated insert in its proper place in the composite-type rocket nozzle. The pyrolytic graphite coated insert is, thereby, in a free-floating condition, and cracking and delamination of the pyrolytic graphite coating is prevented.

3,771,727

FUEL BURNER

Gabriel Robic, Paris, France, assignor to Elf Union S.A., Paris, France

Filed May 26, 1972, Ser. No. 257,389
Int. Cl. B05b *7/12*
U.S. Cl. 239—417.3 **2 Claims**



A fuel burner for the combustion of a ternary emulsion consisting of a liquid fuel, a vapor or a gas and a liquid has a main body connected to a tubular duct for the admission of a liquid

fuel into an mulsion chamber, the chamber being closed by a nozzle in which is engaged a movable regulating needle forming part of an axial operating rod.

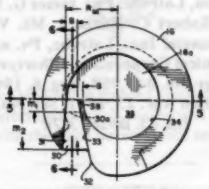
An outer casing which surrounds the body defines a separate admission zone for the vapor or the gas and a liquid, a communication being established beween the zone and the emuslion chamber through passageways arranged in spaced relation within the body about the axis of the operating rod.

3,771,728

SPRAY NOZZLES WITH SPIRAL FLOW OF FLUID AND METHOD OF CONSTRUCTING THE SAME

Frederick F. Polnauer, 250 Riverside Dr., New York, N.Y.

Filed Mar. 17, 1971, Ser. No. 125,320
Int. Cl. B05b *1/34*
U.S. Cl. 239—468 **66 Claims**



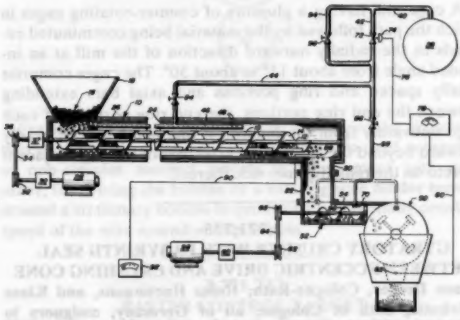
Constructions and methods of designs of nozzles with logarithmic spiral flow are disclosed having ratios of nozzle parameters and the patternation index held within certain ranges which enable such nozzles to be constructed with a high degree of predictability and description of spray performance in terms of flow rate, spray cone angle, patternation index and frictional fluid losses, and in the construction of very small nozzles and/or nozzles for spraying highly viscous fluids.

3,771,729

CRYOGENIC COMMINUTION SYSTEM

Norman B. Frable, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed June 17, 1971, Ser. No. 154,113
Int. Cl. B02c *21/00*
U.S. Cl. 241—65 **2 Claims**



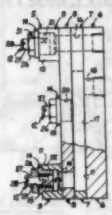
A cryogenic comminution system is disclosed including a mixer-conveyor and a comminution mill wherein cryogenic liquid refrigerant is introduced into the mixer-conveyor to embrittle the material to be comminuted before the material is fed into the mill; and wherein auxiliary cryogenic liquid refrigerant is separately introduced into the mill in order to overcome heat generated in the mill, and thereby maintain the internal components of the mill at a predetermined low temperature.

3,771,730

LIQUID SPRAY SYSTEM FOR METAL ROLLING

Nick Nicoloff, Detroit; Richard B. Courson, Grosse Pointe Park, and Robert Lee Boden, Mt. Clemens, all of Mich., assignors to Almo Manifold and Tool Company, Center Line, Mich.

Filed May 4, 1971, Ser. No. 140,196
Int. Cl. B05b *1/14*
U.S. Cl. 239—536 **6 Claims**



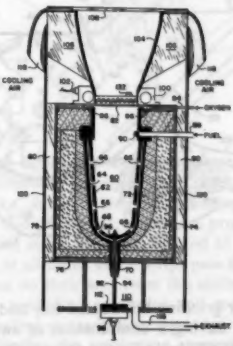
In a liquid spray system for metal rolling, improvements are disclosed comprising, inter alia, a header spray distributor body and spray nozzles carried on said body, a plurality of flow control zones formed in said body, said spray nozzles arranged corresponding to said flow control zones in sets of at least two nozzles in each set, each said flow control zone including an internal cavity formed in said body, liquid flow inlet means for each said cavity, the nozzles of each set serving as liquid flow outlet means for the repsective cavity, each said cavity having a non-uniform cross-section so as to define a liquid flow path which distributes the flow to the respective spray nozzles of that set so as to substantially achieve cubic equality of liquid flow from said nozzles, said body formed of layers, each cavity formed in at least one of said layers.

3,771,731

MECHANICALLY MODULATED COMBUSTION HEATED INFRARED RADIATION SOURCE

Harry B. Dyner, Newton Centre, and Jacques A. F. Hill, Lincoln, both of Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

Continuation of Ser. No. 85,065, Oct. 29, 1970, abandoned.
This application Aug. 21, 1972, Ser. No. 282,523
Int. Cl. F21m
U.S. Cl. 240—41 R **29 Claims**



A combustion chamber is closed at one end by a highly transparent window. A volatile gas and oxygen are introduced into the combustion chamber. After ignition the gaseous flame heats the combustion chamber to a temperature slightly below the melting point of the chamber. Infrared radiation emitted

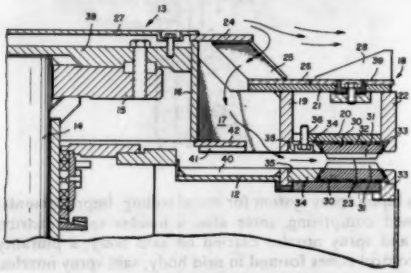
by the heated combustion chamber walls and passing through the window is mechanically modulated by one or more motor driven shutters.

3,771,732

PULPER

Edward H. Cumpston, Jr., 43 Monument Ave., Old Bennington, Vt.

Filed July 19, 1972, Ser. No. 273,135
Int. Cl. B02c *13/18*
U.S. Cl. 241—46.11 **36 Claims**



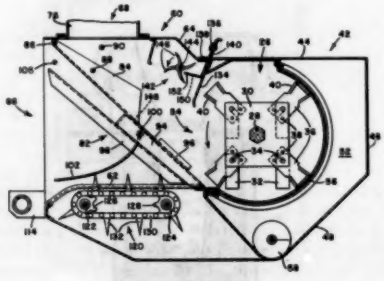
A pulper uses a stator having a ridged peripheral surface and a rotor adjacent the stator and having a peripheral rim with a ridged surface confronting the ridged surface of the stator. Spokes extend from the rotor's central region to support the rim and provide a substantially open, annular region radially inward from the rim. A cleaner is spaced over the open region and preferably includes cleaning vanes allowing only clean pulp to enter the open region between the spokes to be pumped out through the ridged surfaces of the rotor and stator.

3,771,733

FEED GRINDING APPARATUS

Howard C. Hadley, Dallas Center, and Harold Richard Lindstrom, Des Moines, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed July 3, 1972, Ser. No. 268,884
Int. Cl. B02c *11/04*, *13/04*
U.S. Cl. 241—186 R **13 Claims**



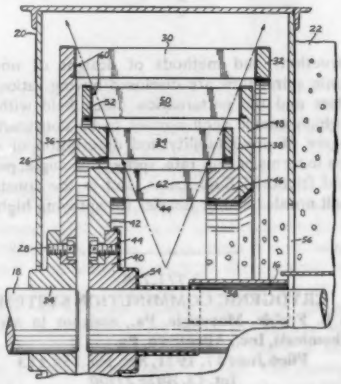
Apparatus for grinding both baled hay and small grains including a rotor having a combination of swinging hammers and fixed knives, a housing for the rotor with an opening at its forward side to admit material thereinto, a material-receiving chamber on the front side of the housing having a bale opening at its front side and a grain opening at its top side, a conveyor selectively operable to convey a bale rearwardly through the chamber and into the rotor housing, and a partition removably positionable in the chamber to extend downwardly and rearwardly from a point forwardly of the grain opening to the lower edge of the opening in the rotor housing, the partition when so positioned being operable to deflect grain deposited through the grain opening downwardly and rearwardly through the chamber and into the rotor housing. A vertically adjustable gate is included at the upper edge of the housing opening to control the height of the opening, the gate being raised for grinding bales and lowered for grinding grain. A shaft having a plurality of radially extending fingers thereon is mounted forwardly of the upper edge of the housing opening and is operative to engage and feed rearwardly through the opening the upper portion of a bale as the latter is conveyed rearwardly through the chamber.

3,771,734

CASE MILL HAVING OUTWARDLY TAPERING FLOW PATH

Earle W. Stephenson, Latrobe, Pa.; James G. Newberry, Lakeland, Fla., and Robert C. Hazzard, Mt. Vernon, Ind., assignors to Kennametal Inc., Latrobe, Pa. and International Minerals & Chemical Corporation, Libertyville, Ill.

Continuation of Ser. No. 847,988, Aug. 6, 1969, abandoned.
This application Apr. 23, 1971, Ser. No. 136,983
Int. Cl. B02c *13/20*
U.S. Cl. 241—187 **5 Claims**



A cage mill having a plurality of counter-rotating cages in which the path followed by the material being comminuted expands in the radially outward direction of the mill at an included angle from about 15° to about 30°. The cages comprise axially spaced end ring portions and axial bars extending between the end ring portions, the end ring portions of each cage outwardly from the innermost one being spaced axially outward beyond the ends of the axial bars of the cage adjacent thereto on the radially inner side thereof.

3,771,735

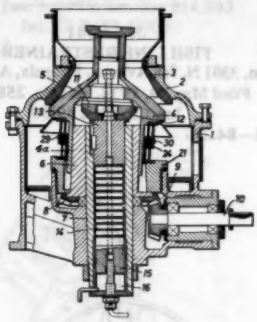
GYRATORY CRUSHER WITH LABYRINTH SEAL BETWEEN ECCENTRIC DRIVE AND CRUSHING CONE

Hanns Decker, Cologne-Rath; Heinz Hurtmanns, and Klaus Schutte, both of Cologne, all of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed Dec. 21, 1971, Ser. No. 210,491
Claims priority, application Germany, Dec. 30, 1970, P 20 64 360.1
Int. Cl. B02c *2/04*
U.S. Cl. 241—216 **7 Claims**

A gyratory crusher is provided with a labyrinth seal between its eccentric drive and its crusher cone comprising upper and lower sealing casings extending into each other and a grease filling the gap between these casings. The outermost sealing

casing is provided with a plurality of vertically spaced annular channels communicating with at least one grease supply nipple and the inside of this outermost casing is provided with a



series of apertures uniformly spaced around the entire circumference of the outermost sealing casing and connecting the annular channels with the gaps between the sealing casings.

ERRATUM

For Class 241—65 see:
Patent No. 3,771,729

3,771,736

DRIVE MEANS FOR COIL WINDING MACHINES

Stig Theander, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 6, 1971, Ser. No. 187,054
Int. Cl. H01f *41/06*
U.S. Cl. 242—7.13 **1 Claim**

For winding a coil winding having a non-circular cross-section of the body, a gear drive arrangement is used composed of non-circular toothed wheels in engagement with each other, for driving the bobbin or a rotating wire holder turning around a stationary bobbin to produce a substantially constant speed of the wire wound on the bobbin.

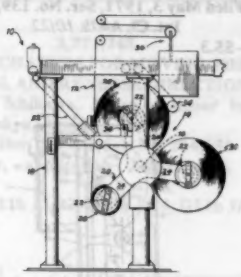
3,771,737

PASTER CONTROL TARGET

Clifford Swann, Fort Erie, Ontario, Canada, assignor to Arcata Graphics, Depew, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,592
Int. Cl. B65l *19/18*
U.S. Cl. 242—58.1 **6 Claims**

A control target for use in indicating annular positioning of the advance end of a web carried by a supply roll including a mounting disc permanently fixed for rotaiton with shaft means employed to removably mount the supply roll and a positioning arm mounted intermediate its ends on the disc for manually induced rotation relative thereto about the axis of the shaft means. The positioning arm carries light reflector and latching or holding devices adjacent its opposite ends; the latching device cooperating with a plurality of annularly



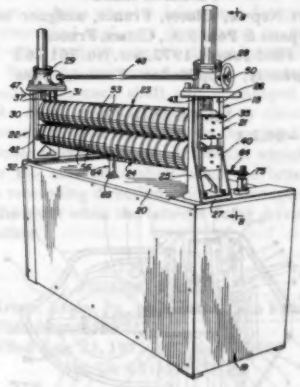
spaced holes formed in a face of the disc to adjustably position the reflector device in radial alignment with the advance end of the web.

3,771,738

STRIP-TENSIONING APPARATUS FOR SHEET METAL SLITTERS

Edward F. Abbey, Frankfort, Mich., assignor to E. F. Abbey & Co., Inc., Frankfort, Mich.

Filed Feb. 17, 1972, Ser. No. 227,186
Int. Cl. B65h *23/14*
U.S. Cl. 242—75.2 **15 Claims**



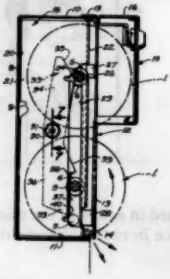
Strip-tensioning apparatus for use between a sheet metal slitter, such as slitters for slitting strips of sheet metals, such as steel, and the like, and recoiling or rewinding apparatus for the slitted sheet metal material. Means are provided for insuring that the slitted strips will be subjected to a constant and uniform tension at all times as the strips pass through the tensioning apparatus on their way from the slitting apparatus to the recoiling or rewinding apparatus and are wound in roll form on the recoiling or rewinding apparatus. Means are also provided for adjusting the tensioning apparatus for use with slitted strips of varying thicknesses so as to provide the proper pressure or bite on the slitted strips as they pass through the tensioning apparatus on their way to the recoiling or rewinding apparatus. The apparatus also includes means for compensating for any sagging of the mid-portion of the lower tensioning roller units in use.

3,771,739

ROLL PAPER DISPENSER

James F. Nelson, North Hollywood, Calif., assignor to The Bobrick Corporation, North Hollywood, Calif.

Filed May 3, 1971, Ser. No. 139,382
Int. Cl. A47k *10/22*
U.S. Cl. 242—55.3 **7 Claims**



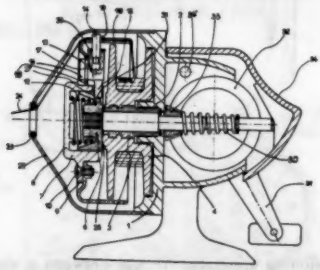
A dispenser for roll paper, such as toilet tissue, in which the dispenser receives two rolls of paper, one above the other. The rolls are mounted on mandrels which are guided in vertical guide slots with the lower roll in a dispensing position. A lever engaged by the mandrel of the lower roll holds the upper roll in reserve until the lower roll is depleted, whereupon, the lever is released to permit the use of the upper roll which rotates on the depleted lower roll as the paper is dispensed.

3,771,740

FISHING REEL

Alain Robert Nepote, Cluses, France, assignor to Etablissements Carpano & Pons S.A., Cluses, France

Filed June 9, 1972, Ser. No. 261,262
Claims priority, application France, June 11, 1971, 7121321
Int. Cl. A01k *89/00*
U.S. Cl. 242—84.2 A **4 Claims**



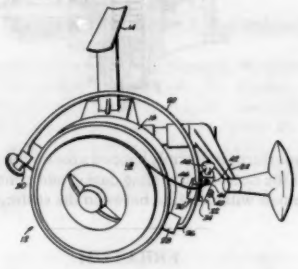
In spin casting fishing reel, a winding cup is axially slidably mounted at the forward end of an axially movable driving shaft, but locked for rotation therewith, with a spring urging the winding cup to an outer position away from the end of the shaft, in which position a line pickup is held by a shoulder on the shaft in a line winding position protruding from the winding cup. When, for casting, the shaft is moved axially forwards, the winding cup is axially stopped by abutment against an exterior nose cone, and by further moving forward the shaft the shoulder moves towards the winding cup, and the pickup withdraws and locks the shoulder/winding cup in this position. When the shaft is returned to its rear position, the winding cup moves rearwardly leaving ample space between the cup and cone for outlet of line from a spool. Upon rotation of the shaft, a cam returns the pickup to its winding position and frees the winding cup which moves forward under the action of the spring.

3,771,741

FISH LINE RESTRAINER

Leon J. Stein, 3301 N. 7th Avenue, Phoenix, Ariz.

Filed May 30, 1972, Ser. No. 258,112
Int. Cl. A01k *89/00*
U.S. Cl. 242—84.2 G **4 Claims**



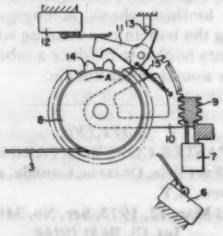
For use on a spinning reel, a line restrainer to hold the end of the line when the reel is not in use. The line restrainer includes means adapting it for attachment to the bail at about its location to the housing, and means for capturing the end of the fishing line, the body being sized to fit in the space between the bail and the handle for operating the spinning reel in an out of the way disposition.

3,771,742

SELF-RETRACTING TYPE SEAT BELT DEVICE

Motohiro Okada, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1972, Ser. No. 258,085
Claims priority, application Japan, May 29, 1971, 46/37180
Int. Cl. A62b *35/00*; B65h *77/00*
U.S. Cl. 242—107.4 **10 Claims**



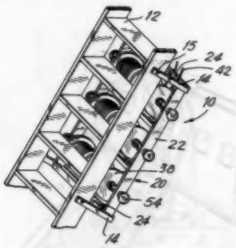
A self-retracting type seat belt device in which, upon buckling of the seat belt, a belt winder is automatically caused to rotate initially so as to impart a suitable slack to the seat belt and is then locked to preclude any further extension or retraction of the seat belt.

3,771,743

WIRE SPOOL HOLDING AND DISPENSING APPARATUS

Paul V. De Luca, Port Washington, and Gustav Drews, Rocky Point, both of N.Y., assignors to Porta Systems Corp., Roslyn, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,803
Int. Cl. B65h *49/00*
U.S. Cl. 242—129.8 18 Claims



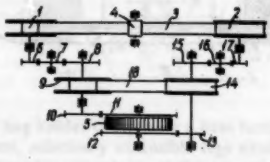
A wire spool holding and dispensing apparatus comprises a frame having a plurality of transverse divider members and a median member secured to said transverse divider members and disposed laterally with respect to said frame thereby forming a plurality of compartments. A stub-shaft is fixedly mounted on each side of the median member within each of the compartments. Each of the stub-shafts is disposed in coaxial alignment with another stub-shaft which is fixedly mounted against undesired rotational movement and secured to the frame, while the other stub-shaft is capable of axial movement. A wire spool is disposed between coaxial pairs of the stub-shafts with the axially movable stub-shaft exerting a frictional force on the ends of the wire spool to retard reverse rotational movement thereof, and wire guide members are secured to the frame associated with each of the wire spools with the ends of the wire extending through the guide members to locate the ends at a predetermined position with respect to the frame.

3,771,744

MEANS FOR TRANSPORTING AN INFORMATION CARRIER

Igor Alexandrovich Yastrebov, Delegatsky pereulok, 10, kv. 1; Vladimir Valerianovich Benderovsky, ulitsa Dymerskaya, 37, kv. 1; Alexandr Ivanovich Schepotiev, Brest-Litovsky prospekt, 11, kv. 39; Alexel Petrovich Lysenko, Bulvar Iv. Lepse, 57, kv. 114; Petr Alexandrovich Dvornikov, ulitsa Dovnar-Zapolskogo, 3/4, kv. 7, and Anatoly Fedorovich Korotkov, Krakovskaya ulitsa, 12, kv. 40, all of Kiev, U.S.S.R.

Filed Dec. 22, 1971, Ser. No. 210,950
Int. Cl. B65h *59/00*; G11b *15/32*
U.S. Cl. 242—196 1 Claim



A means for transporting an information carrier from one reel to another one with the aid of the driving shaft of a motor, in which the assembly for tensioning an information carrier is fashioned as a hydraulic motor with two rotors mounted on a common shaft in such a manner that they are capable of independent rotation.

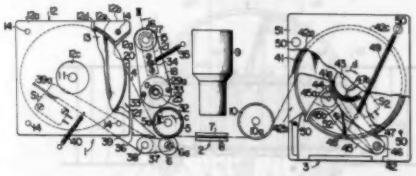
One rotor is operatively rigidly connected with one of the reels, and the other rotor is similarly connected with the other reel.

3,771,745

FILM FEED MECHANISM FOR MOVING THE FILM IN NORMAL AND REVERSE DIRECTIONS

Hiroshi Yamada, Ichikawa, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Dec. 6, 1971, Ser. No. 204,951
Claims priority, application Japan, Dec. 21, 1970, 45/116048
Int. Cl. B11b *15/32*; G03b *1/04*; G11b *3/00*
U.S. Cl. 242—204 9 Claims



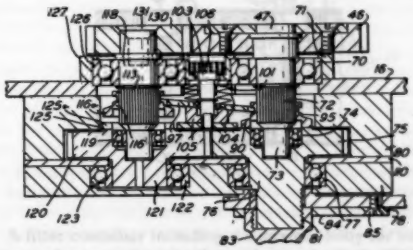
The mechanism is arranged to move film between a film supply reel and a film take-up reel each mounted on and rotatable with a respective shaft. A respective drive wheel is mounted on each shaft, and a one-way clutch is interposed between each drive wheel and its associated shaft, with reversible driving means being operatively connected to both drive wheels to rotate the same simultaneously in the same selected direction. Each one-way clutch couples its drive wheel to its shaft only when its drive wheel is driven in a direction to wind film on the associated reel, and disconnects its drive wheel from its shaft when its drive wheel is driven in the direction to unwind film from the associated reel. A respective brake wheel is mounted on each shaft and is engaged by an associated brake shoe, and a second one-way clutch is interposed between each brake wheel and its associated shaft. The one-way clutches associated with each brake wheel are effective to brake the associated shaft when the latter is being rotated in an unwinding direction, and to uncouple the brake wheel from the shaft when the latter is being driven in a film winding direction.

3,771,746

FISHING REEL

Frederic S. Griste, Exton, Pa., assignor to Penn Fishing Tackle Mfg. Co., Philadelphia, Pa.

Filed Aug. 23, 1971, Ser. No. 173,907
Int. Cl. A01k *89/00*
U.S. Cl. 242—215 4 Claims



A fishing reel having a positive lever control of the spool speed whereby two speeds of spool rotation are attained. The

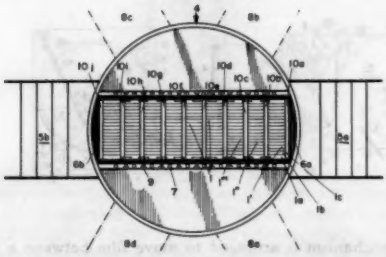
spool shaft has a driving gear thereon with which a drive gear is in continuous engagement. A pair of gears are provided at each end of a lever and cam controlled tilt plate and engagable alternately for driving the drive gear directly for high speed operation and indirectly through another gear for low speed operation.

3,771,747

AIRCRAFT-LANDING STRIP DEVICE

Leon Mednikow, 290 9th Avenue, New York, N.Y.

Filed July 1, 1971, Ser. No. 158,893
Int. Cl. B64f *1/00*
U.S. Cl. 244—114 R **5 Claims**



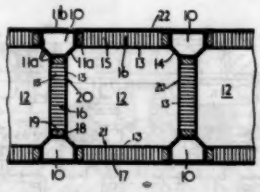
A turntable air-strip having a series of aligned variable speed surfaces for facilitating take-off and landings of aircraft, together with a series of blowers and a series of baffles aligned along the series of variable speed air strip surfaces such that the blowers and baffles are produceable of air currents further facilitatable of take-off and landings of aircraft by directing the air current in the path and/or against lift surfaces of the aircraft, such as an airplane particularly of the jet plane variety.

3,771,748

STRUCTURES

Michael Weston Jones, Droitwich, Worcestershire, England, assignor to Imperial Metal Industries (Kynock) Limited Birmingham, England

Continuation of Ser. No. 1,073, Jan. 5, 1970, abandoned. This application Oct. 10, 1972, Ser. No. 296,230
Int. Cl. B64c *3/20*
U.S. Cl. 244—123 **4 Claims**



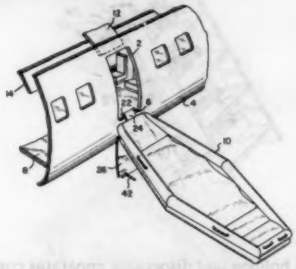
A multi-cell structure, for example an aircraft wing, comprising polygonal support members or spines and panel members bonded to the spines so that a median plane of a panel member intersects one side of a spine and the panel member is bonded to two other sides of the spine.

3,771,749

EMERGENCY AIRCRAFT EVACUATION APPARATUS AND METHOD

Edward H. Smialowicz, Point Pleasant, N.J., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jan. 5, 1973, Ser. No. 321,265
Int. Cl. B64d *25/14*
U.S. Cl. 244—137 P **14 Claims**



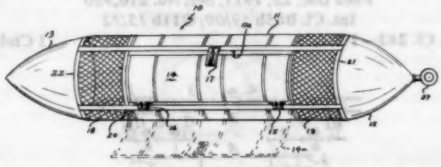
Emergency aircraft evacuation slide apparatus and method for automatically displacing an inflatable slide from a stowed position in a container on the door of the aircraft to a deployed position on the exterior of the aircraft ready for evacuation of passengers. The apparatus includes a pack board slidably received in the container mounted on the interior of the door. The deflated slide is folded and stowed in a pack that is provided on the pack board. The slide is connected to the floor of the aircraft by the girt which projects through a trap door in the bottom of the container. The apparatus includes a pair of spring biased arms on the pack board which cooperate with ejector straps extending between the lower end of the board and the interior of the container above the pack board to eject the slide and pack board through the doorway when the door is raised.

3,771,750

HELICOPTER RESCUE CONTAINER

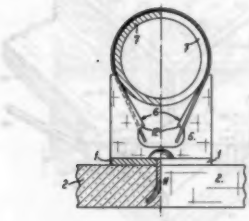
James W. Strayer, 602 Gerald Ave., New Carlisle, Ohio

Filed June 29, 1971, Ser. No. 157,916
Int. Cl. B64d *25/02*
U.S. Cl. 244—137 P **3 Claims**



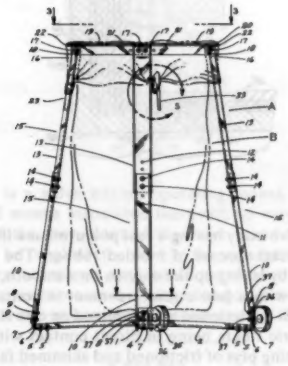
A portable helicopter-borne and self-contained rescue and delivery capsule having a cylindrical-shaped and cage-like body capable of carrying at least one person, and formed with cone members on each end thereof providing a streamlined configuration for facilitating penetration of both heavy forest and canopy jungle areas.

3,771,751
PIPE CLAMP
Charles Derivaz, La Tour-De-Peilz, Switzerland, assignor to Samvaz S.A., Fenil S/Vevey, Switzerland
Filed Nov. 8, 1971, Ser. No. 196,347
Claims priority, application Switzerland, Dec. 1, 1970, 17818/70
Int. Cl. F16l 3/12
U.S. Cl. 248—74 B 3 Claims



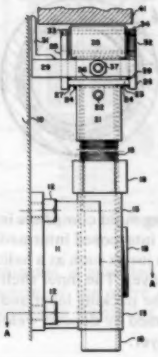
A pipe clamp for the fastening of pipes and tubes onto walls and the like. This pipe clamp has at one end a V-shaped abutment as well as hooking formations. The pipe rests in the V-shaped abutment and a flexible band provided with apertures passes above the pipe and is hooked in the hooking formations so as to apply the pipe against said abutment.

3,771,752
REFUSE BAG HOLDER
Robert F. Meeh, 7424 Whitehaven, St. Louis, Mo.
Filed Dec. 20, 1971, Ser. No. 209,784
Int. Cl. B65b 67/12
U.S. Cl. 248—98 5 Claims



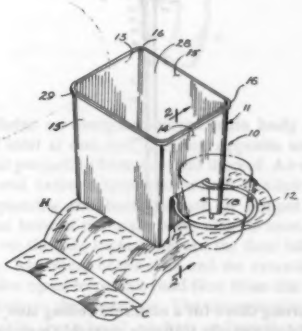
A refuse bag holder comprising a base formed of intersecting members, selectedly extensible legs extending upwardly from said base for converging at their upper ends and a support ring secured to the upper ends of said legs. Clasp members are provided on said legs for engaging portions of the bag to be filled. Said support ring is formed of a plurality of components adapted for mutual contraction and expansion for accommodating bags of varying diameter. The components of holder A are designed for assembly and disassembly.

3,771,753
SHORE BRACKET
James Justin Wilbur, Closter, N.J., and Richard Kamholtz, New York, N.Y., assignors to Harsco Corporation, Wormleysburg, Pa.
Filed Jan. 19, 1972, Ser. No. 218,908
Int. Cl. A47f 5/10; A47h 33/00
U.S. Cl. 248—295 9 Claims



A shoring bracket for overhead form work has a support head engageable with a form work beam. The head is vertically adjustable for positioning of the form work. The head of the bracket includes a roller engaging the form work beam and a lock for the roller to prevent rotation thereof when the head is supporting the form work. The roller is unlocked for longitudinal rolling of the form work beam over the roller for removal of the form work.

3,771,754
LITTER CONTAINER FOR AUTOMOBILES
William Swartz, 1430 Wrightwood, Highland Park, Ill.
Filed Mar. 13, 1972, Ser. No. 234,244
Int. Cl. A47k 1/08
U.S. Cl. 248—311 8 Claims



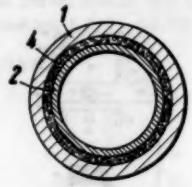
A litter container including a container body for receiving litter and a mounting clip for mounting the body. The clip is constructed to perform an auxilliary function, namely that of receiving and releasably holding an object outside of the container. The object may be a drinking glass, a bottle, or any accessory that an occupant of the automobile may wish to have handy, such as a book, a road map, a chart, etc.

3,771,755

CENTRIFUGAL CASTING MOLD

Hans Hermann Oehler, Wattenscheid-Hontrop, and Johannes Jansen, Bochum, both of Germany, assignors to Fried. Krupp Huttenwerke AG

Filed June 28, 1971, Ser. No. 157,430
Int. Cl. B22d 13/02
U.S. Cl. 249—135 6 Claims



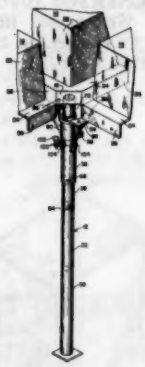
A centrifugal casting mold comprises inner and outer coaxial steel shells with an interposed intermediate packing layer of granular material. An insert such as a helical band may be provided in the packing layer. The inner shell is deposit welded on the inner surface of the packing layer and optionally the outer shell may also be formed by deposit welding on the outer surface of the packing layer.

3,771,756

DOME-SUPPORTING SHORE ASSEMBLY FOR A CONCRETE CEILING SLAB FORM

Dennis R. Pipala, Park Ridge, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Division of Ser. No. 3,061, Jan. 15, 1970, Pat. No. 3,647,173. This application Oct. 18, 1971, Ser. No. 190,215
Int. Cl. E04g 11/40
U.S. Cl. 249—212 1 Claim



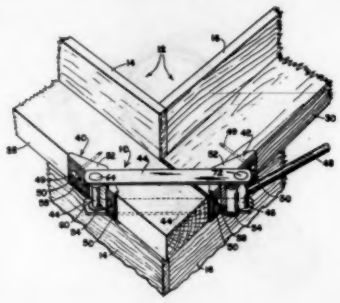
A supporting shore for a concrete ceiling slab, having a vertically and downwardly shiftable rotatable member which normally supports the adjacent truncated four corners of a quadrilaterally arranged group of four inverted generally rectangular pan-shaped slab-supporting domes and which, in the lowered and rotated position of the member, moves out of operative register with two of the four corners so as to release the other two corners for dome-removal purposes, while at the same time the shore continues to support the concrete ceiling slab until the latter has become fully hardened.

3,771,757

SELF-CONTAINED, ARTICULATED, OUTSIDE CORNER-FORMING DEVICE FOR A CONCRETE WALL FORM

James A. Black, Deerfield, Ill., assignor to Superior Concrete Accessories, Inc., Franklin Park, Ill.

Division of Ser. No. 254,194, May 17, 1972. This application Sept. 25, 1972, Ser. No. 291,732
Int. Cl. E04g 17/00
U.S. Cl. 249—219 W 6 Claims



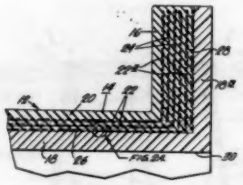
A self-contained, articulated, outside right angle corner-forming device by means of which the adjacent end regions of two, waler-like panel-reinforcing boards are held in their right angular relationship and are forced hard against the concrete wall form panels which they reinforce.

3,771,758

LINED PINCH VALVE BODY

Robert K. Little, Mount Holly, N.J., assignor to RKL Controls, Inc., Hainesport, N.J.

Filed Apr. 5, 1971, Ser. No. 131,366
Int. Cl. F16k 7/02
U.S. Cl. 251—4 3 Claims



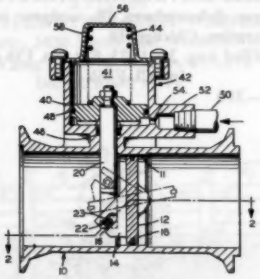
A pinch valve body having a cast polyurethane liner within a fabric reinforced carcass of molded rubber. The lined valve body is made by laying up the carcass on a smooth, clean oversize mandrel with a fabric reinforcement in contact with the mandrel which is frictioned and skimmed on one side only, the uncoated fabric fibers being in direct contact with the mandrel. Reinforcing plys of frictioned and skimmed fabric are applied around the special fabric layer to build the body to the desired strength and thickness. The carcass is then placed in a mold and partially cured under heat and pressure. Following the partial curing step, the oversize mandrel is removed and the carcass is placed in a mold with a conventional size mandrel. Liquid polyurethane is then poured into the mold to fill the void between the mandrel and the carcass. The mold is closed and the body is cured under heat and pressure to complete the curing of the carcass as well as the polyurethane which becomes firmly bonded to the exposed fibers of the special reinforcing fabric.

3,771,759

BUTTERFLY VALVE

James J. Pauquette, Clare, Mich., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Apr. 5, 1972, Ser. No. 241,127
Int. Cl. F16k *31/165, 1/22*
U.S. Cl. 251—58 1 Claim



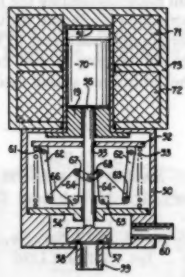
A butterfly valve actuated by a piston rod end operating in a slot integral with the valve disc. The disc is supported for rotation by a pair of blind stub shafts.

3,771,760

VALVES

William Joseph Sheldon, Bolton, and Bernard Gaylard, Leigh, both of England, assignors to Burnden Park Engineering Company Limited, Bolton, England

Filed Oct. 28, 1971, Ser. No. 193,329
Claims priority, application Great Britain, Oct. 29, 1970, 51,564/70
Int. Cl. F16k *31/56*
U.S. Cl. 251—75 14 Claims



Disclosed is a valve having operating means and a valve member and means associated therewith to vary, at least at some part of the movement of the valve member, the effort required to be applied to, or by, the operating means to achieve a predetermined amount of movement of the valve member. The latter means is arranged to go over-center as the valve member moves away from the valve seat.

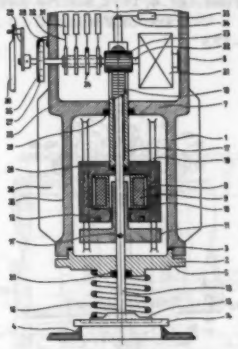
3,771,761

VALVE ACTUATOR

Gerhard Standke, Feldrennach, Germany, assignor to Runtal Holding Company S. A. Glarus, Neuchatel, Switzerland

Filed Feb. 24, 1972, Ser. No. 228,967
Claims priority, application Germany, Feb. 27, 1971, P 21 09 449.5
Int. Cl. F16k *31/04*
U.S. Cl. 251—134 9 Claims

A valve actuator having a casing adapted to be connected to a valve of the type in which a closure member is movable to and away from a valve seat and including an electromagnet. The armature of the electromagnet is secured to a longitudinally displaceable valve spindle which carries the closure member. The electromagnet is mounted for displacement in the longitudinal direction of the valve spindle and is connected to a power operated displacing means via a drive member therefor.

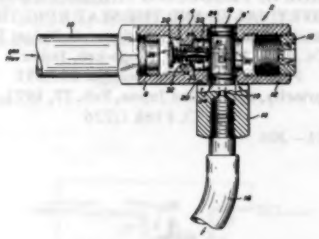


3,771,762

SAFELY DISCONNECTABLE FLOW LIMITER VALVES FOR A HIGH PRESSURE FLUID LINE

Andrew B. Mayernik; Edwin F. Beckwith, and Howard N. Hubbard, all of McKeesport, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 13, 1972, Ser. No. 297,539
Int. Cl. F16l *37/28*
U.S. Cl. 251—148 1 Claim



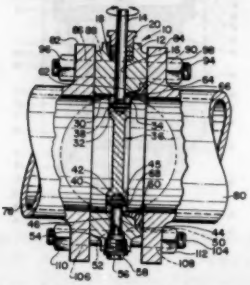
Device includes an elongated bored main body having a pressure fluid inlet at one end, a closed opposite end, and a branch conduit projecting from one side thereof. An extension closed at its end extends from the branch conduit into the main body spanning the bore thereof. A poppet valve is disposed in the bore of the main body with its stem abutting the extension on the side thereof toward the fluid inlet end of the main body. Abutment of the stem and the extension keeps the poppet valve open to permit fluid flow from the inlet end of the main body to the extension. The extension is provided with deformable peripheral gaskets adjacent each end whereby the gaskets are deformed by high pressure fluid flow to retain the branch conduit connected with the main body. A plurality of pairs of opposed radial holes is provided along the length of the extension disposed in the bore of the main body whereby a balance of fluid pressure surrounding the extension is maintained so that the branch conduit can be safely and quickly disconnected from the main body under high fluid pressure.

3,771,763

BUTTERFLY VALVE WITH SIDE MOUNTED PRESSURE SEAL RING

Edward B. Myers, Oreland, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 4, 1972, Ser. No. 240,913
Int. Cl. F16k 1/22
U.S. Cl. 251—173 7 Claims



An improvement in a readily replaceable disc seal for a butterfly valve includes a hollow body supporting a rotatable disc, which body can readily be inserted in or removed from a position between two opposing ends of a conduit. An inner portion of the disc seal has an annular triangular shaped lip portion extending away from an inclined side wall portion of the body to form a wedge shaped recess therewith. When the disc is in a closed position, the pressure of a flow line fluid on the non sealing side of the valve is applied by way of a restricted passageway, formed between the periphery of the disc and the body, to the wedge shaped recess to force the lip of the disc seal into fluid tight sealing contact with an outer edge portion of the periphery of the disc.

3,771,764

METHOD OF PRODUCING THE SEAT RING OF A BUTTERFLY VALVE AND THE SEAT RING THEREOF

Akio Miyauchi, Akashi, Japan, assignor to Naigai Rubber Industry Co., Ltd., Akashi-shi, Hyogo-ken, Japan

Filed Feb. 25, 1972, Ser. No. 229,391
Claims priority, application Japan, Feb. 27, 1971, 46/9856
Int. Cl. F16k 1/226
U.S. Cl. 251—306 6 Claims

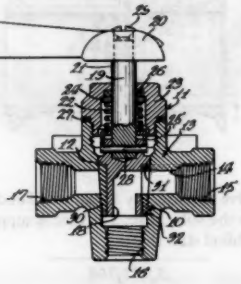
This invention relates to a method of producing the seat ring of a butterfly valve which has the steps of inserting concentrically a preformed inner layer of wear resisting and anticorrosive material and an outer layer of thermosetting resin or thermoplastic resin having high softening temperature into the cavities of preheated metal molds through a predetermined space to hermally expand the outer layer by the preheat of the metal mold to closely contact the outer layer with the inner surfaces of the cavities of the metal molds, then injecting molten resilient material between the inner and outer layers simultaneously through a plurality of injecting holes opened at intervals from the exterior of the outer layer around the outer layer, then cooling to solidify the resilient material to form an intermediate layer for integrating the inner and outer layers to provide three layers. This invention relates also to the seat ring produced by the method of this invention.

3,771,765

SELF-LAPPING SEAL STRUCTURE

John N. Scapes, Schaumburg, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed Aug. 31, 1971, Ser. No. 176,653
Int. Cl. F16k 5/02
U.S. Cl. 251—310 19 Claims



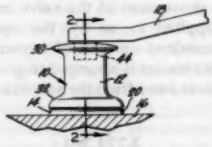
A fluid seal structure for use in devices such as fluid flow control valves wherein the relatively movable seal elements incorporate integral self-lapping means for effecting an accurate seal fit in the final seal construction. The self-lapping means may comprise an abrasive surface portion of one of the elements having preselected cold flow characteristics providing for lapping-in of the confronting element relative to the abrasive element surface portion and cold flow of the lapping element into microscopic depressions which may remain in the confronting element notwithstanding the lapping-in operation. The fluid seal construction is adapted for use in valves wherein the elements are originally machined to have accurate fitted conformation with the lapping-in and cold flow operations providing for further improved sealed association between the elements.

3,771,766

SAILBOAT WINCH

Donald M. Pillsbury, Jr., 35 Fairmont Dr., East Greenwich, R.I.

Filed Sept. 28, 1972, Ser. No. 293,029
Int. Cl. B66d 1/30
U.S. Cl. 254—150 10 Claims



An improved sailboat winch comprising a flanged drum journaled on an upstanding portion of a base, a handle demountably attached to the top of the drum for manual rotation of the drum, and spring-loaded pawls extending from the base and engaging detents on an interior surface of the drum to permit rotation of the drum in one direction only. The winch drum is secured axially to the base by an inwardly directed flange at the bottom of the drum which extends

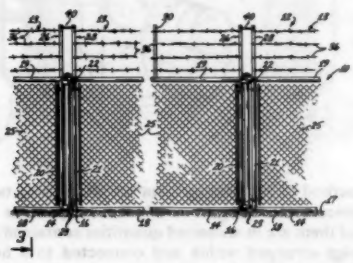
beneath the outwardly spring-biased pawls. A portion of each pawl extends axially below the drum bottom flange, allowing the inward compression of the pawls by insertion of a string or wire between the drum and the base, thus permitting the removal of the drum from the base without the removal of fastenings or the use of tools.

3,771,767

FENCE STRUCTURE WITH BARBED WIRE EXTENSION

Earle T. Dougherty, 3420 North 71st Avenue, Phoenix, Ariz.

Filed July 20, 1972, Ser. No. 273,678
Int. Cl. E04h *17/14*
U.S. Cl. 256—11 8 Claims



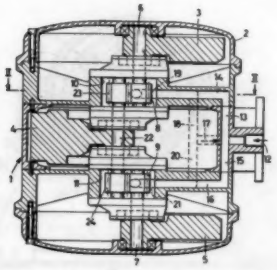
A fence structure having a barbed wire extension carried on flexible resilient wire support arms affixed to the top rail of the fence.

3,771,768

ECCENTRIC-MASS VIBRATOR FOR MACHINES ADAPTED TO THE MECHANICAL HARVESTING OF OLIVES AND FRUITS IN GENERAL

Giovanni Mario Gebendinger, Marignolle, Italy, assignor to Machine Agricole S.P.A., Firenze, Italy

Filed June 1, 1971, Ser. No. 148,809
Int. Cl. B06b *1/16, 1/18;* A01g *19/00*
U.S. Cl. 259—1 R 1 Claim



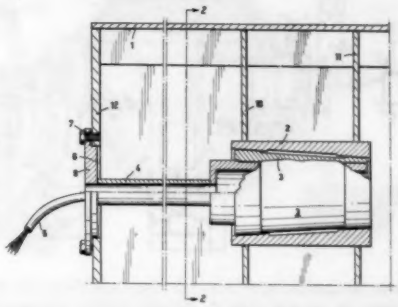
A vibrating mechanism for fruit-harvesting machines wherein the trunk and branches of a fruit-bearing tree are shaken, in which three eccentric masses are so arranged that they rotate in three different parallel planes, the outer masses being rotated at the same time, and at the same speed and being equal in weight to one another, the intermediate mass being rotated in a direction opposite to that of the other two masses and having a weight which is the sum of the weights of the two outer masses, all three masses having the same eccentricity. By such an arrangement, detrimental alternate twists on the trunk and branches of the tree are effectively prevented.

3,771,769

VIBRATOR ASSEMBLY FOR CONCRETE MOLD PLATES

Ossi Niemi, Tampere, Finland, and Heino Juvonen, Kreis, Budingen, Germany, assignors to Torjalan Terasvalmiste Kommandiitiyhtio Veljekset Virtanen, Torjala, Finland

Filed July 1, 1971, Ser. No. 158,952
Int. Cl. B28b *1/08;* B01f *11/00*
U.S. Cl. 259—1 R 15 Claims



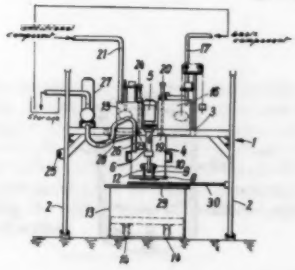
A vibrator assembly for a concrete mold plate comprising a vibrator to be located by means of form wedging or form fitting within the mold plate to one or more partition walls thereof, said vibrator being provided with an elongated fitting member making it possible to secure the vibrator relatively deeply inside the mould by fixing the fitting element to the mold plate itself.

3,771,770

APPARATUS FOR MAKING MOLDED ARTICLES FROM FOAMED SYNTHETIC MATERIAL

Walter Lehmann, Pleidelsheim, Germany, assignor to Mirabed A.G., Zug, Switzerland

Filed May 4, 1971, Ser. No. 140,117
Claims priority, application Germany, May 6, 1970, P 20 22 147.0
Int. Cl. B01f *7/16*
U.S. Cl. 259—7 10 Claims



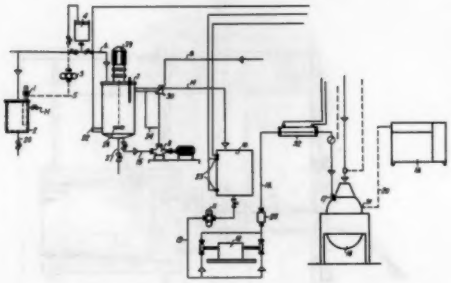
A method of and apparatus for making molded articles from foamable synthetic substances, especially polyurethane, according to which the predosed major component of the foamable substance has admixed thereto a predosed additional component while said predosed major component and said predosed additional component are each in bulk introduced in a mixing container from which the thus made up foamable substance is introduced into a mold.

3,771,771

APPARATUS PREPARING A MIXTURE FOR BONDING GRANULES OF VEGETABLE ORIGIN

Miroslav Deml, Frydek-Mistek, and Jaroslav Limberg, Praha, both of Czechoslovakia, assignors to Hutni Projekt Praha, Projekoni Inzenyrska organizace, Ostrava, Czechoslovakia

Filed June 23, 1972, Ser. No. 265,805
Int. Cl. B01f 7/06
U.S. Cl. 259—8 3 Claims



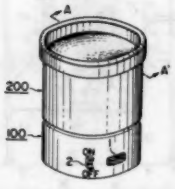
An apparatus for the preparation of binding mixture to be applied to granules of vegetable origin, in the fabrication of panels or of shaped elements for building purposes. The apparatus comprises a hardener stirring vessel provided with a vertical pump connected to a graduated hardener vessel and a binding mixture mixer which binding mixture mixer is connected to a binding mixture repumping pump connected on its turn with a binding mixture storage tank. The storage tank is connected through a filter with a binding mixture variable controlled-volume pump, the said binding mixture controlled-volume pump being connected to the injection jets of a binding mixture applicator for the application of binding mixture onto granules of vegetable origin.

3,771,772

ULTRASONIC CLEANING DEVICE

Keisuke Honda, 37 Shinyoshi-cho, Toyohashi-shi, Aichi-ken, Japan

Filed May 8, 1972, Ser. No. 251,148
Claims priority, application Japan, May 15, 1971, 46/32758
Int. Cl. B01f 11/02; B08b 7/02
U.S. Cl. 259—72 6 Claims



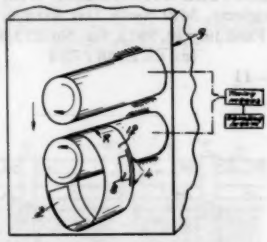
An ultrasonic cleaning device is provided which comprises a base unit and a cleaning chamber unit removably mounted on the base unit. An ultrasonic frequency transducer is attached to the bottom of a cleaning chamber, and the high frequency energy output of a high frequency oscillator circuit which is disposed within the base unit together with a power supply circuit is transmitted to the ultrasonic frequency transducer by electromagnetic induction coupling.

3,771,773

METHOD OF AND DEVICE FOR INTERMIXING TWO OR MORE COMPONENTS TO MAKE UP A SUBSTANCE, ESPECIALLY FOR DENTISTRY

Karl-A. Schriever, Arnoldstrasse 56, Hamburg, Germany

Filed Nov. 30, 1971, Ser. No. 203,207
Int. Cl. B29b 1/08
U.S. Cl. 259—185 7 Claims



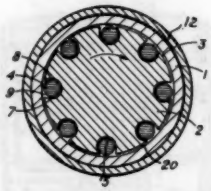
A method of and arrangement for intermixing two or more components according to which the components or at least some of them are in measured quantities contained in separate thin bags arranged within and connected to a hose-shaped container which is subjected to pressure sufficient to break the bags while the hose-shaped container which does not break at this pressure is worked to cause the contents of the broken bags to intermix.

3,771,774

MIXING DEVICE SUITABLE FOR INCORPORATION IN SCREW EXTRUDERS

William George Stephen Hook, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 1, 1971, Ser. No. 185,752
Claims priority, application Great Britain, Oct. 16, 1970, 49,284/70
Int. Cl. B29b 1/08; B02c 15/08; A21c 1/06
U.S. Cl. 259—193 4 Claims



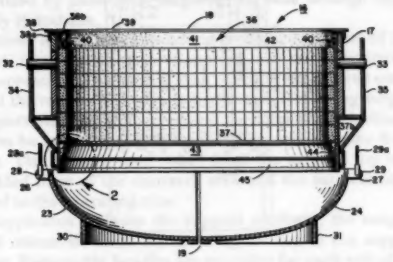
A mixing device through which material may pass under pressure comprising a sleeve, a longitudinally extending core member mounted within the sleeve so as to allow relative rotation of the sleeve and core member, a plurality of channels formed in either the sleeve or the core member comprising a link portion flanked by two side portions and a plurality of idler rollers each located in a channel such that relative rotation of the sleeve and core member during passage of material through the mixer causes a counter-rotation of the idler rollers, wherein one side portion of each channel diverges away from the idler roller located within the channel so as to define a wedge-like gap between the side portion and the roller into which material is forced by the relative rotation of the sleeve and core member.

3,771,775

REFRACTORY-LINED CONTAINER FOR SCRAP

Richard J. Reinbold, Allentown, Melvin J. Mateer, Middletown, and John F. Muhlhauser, Lemoyne, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed July 3, 1972, Ser. No. 268,414
Int. Cl. F27b *17/00*
U.S. Cl. 266—5 R 12 Claims



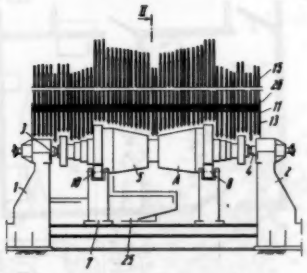
A scrap container wherein scrap is preheated, having the inner surface of the shell lined with refractory material, including a first expansion means atop the refractory lining and a second expansion means below the refractory lining.

3,771,776

HEAT TREATMENT APPARATUS

Wolfgang Kogl, Dusseldorf-Oberkassel, Germany, assignor to DSD Dillinger Stahlbau GmbH, Dusseldorf, Germany

Filed Apr. 13, 1972, Ser. No. 243,745
Claims priority, application Germany, Apr. 14, 1971, P 21 17 948.6
Int. Cl. C21d *1/62*
U.S. Cl. 266—6 S 9 Claims



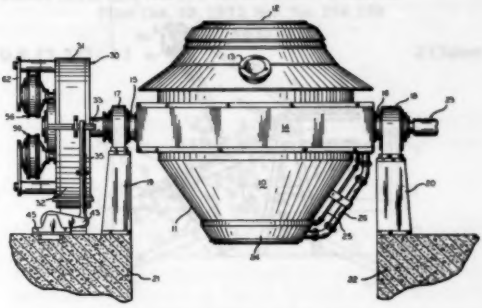
An improved spray heat treatment apparatus for heat treating axially symmetrical bodies of metal in which the distance between the spray nozzles and the body to be treated is easily adjustable. The invention includes an elongated tubular member having a spray nozzle at one end which is axially movable with respect to a stationary housing. The housing includes means for supplying the medium to be sprayed to the tubular member and thus the spray nozzle for any axial position of the tubular member.

3,771,777

CONVERTER VESSEL DRIVE USING HYDRAULIC MOTORS

Howard M. Fisher, and Bernd G. Albers, both of New Castle, Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Dec. 29, 1971, Ser. No. 213,610
Int. Cl. C21c *5/50*
U.S. Cl. 266—36 P 7 Claims



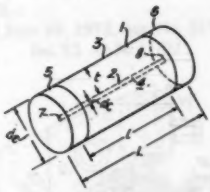
At least one trunnion shaft of a tiltable metallurgical vessel has a driven gear affixed thereto. A gear housing surrounds the driven gear and is journaled on the shaft. Several hydraulic motors are mounted on the gear housing. Pinions on the respective motor shafts engage directly with the driven gear. Rotation of the gear housing, due to reaction between the pinions and gear, is resisted with a torsion bar.

3,771,778

PRESSURIZED RUBBER FOR ABSORBING IMPACT ENERGY

John George Muller, 7817 Calpurnia Ct., McLean, Va.

Filed Feb. 1, 1971, Ser. No. 111,534
Int. Cl. F16g *5/00*
U.S. Cl. 267—140 2 Claims



The present invention is a method for more fully utilizing a mass of rubber or other elastomer to cushion and absorb the energy of impact when one rigid body strikes another. The method involves provision of at least one liquid filled leakproof interior cavity traversing substantially all of the rubber mass. The crushing effect of the impact pressurizes the liquid thereby causing the rubber to be stressed, and deformed and energy to be absorbed.

3,771,779

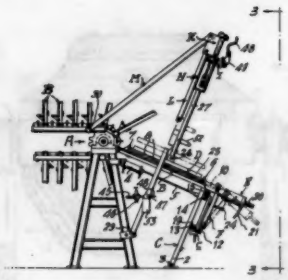
SURFACE ALIGNER FOR PANEL BOARDS

John L. Mortoly, Poughkeepsie, N.Y., assignor to James L. Taylor Manufacturing Company, Poughkeepsie, N.Y.

Filed Oct. 27, 1971, Ser. No. 193,077
Int. Cl. B23q *3/08*; B27d *3/00*; B30b *15/16*; F16p *3/20, 3/22*
U.S. Cl. 269—23 8 Claims

Boards are arranged edge to edge to form a panel between the jaws of clamps which are actuated by a motor-operated wrench manipulated by one hand of the operator and the top

surfaces of the boards are held in alignment by a hold-down element which is power actuated against the boards by a motor-driven apparatus the operation of which is controlled by either an electrical circuit having switches or a fluid (pneumatic or hydraulic) circuit having valves and including one switch or valve operated upon movement of the wrench by



one hand of the operator and a control lever manipulated at the same time by the other hand of the operator to prevent injury of either hand between the hold-down element and the panel, said circuits including holding devices to permit the hold-down element to be retained in position to continue the exertion of the aligning pressure to the panel boards while the wrench is moved from one clamp to another clamp.

3,771,780

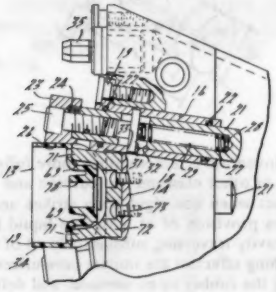
CLAMPING DEVICE FOR AN ACCURATELY LOCATED WORKPIECE

Robert J. Doocey, Upper Saddle River, N.J., assignor to Standard Tool & Manufacturing Co., Lyndhurst, N.J.

Filed Mar. 11, 1971, Ser. No. 123,268

Int. Cl. B23b *31/10;* **B25b** *1/08*

U.S. Cl. 269—153 **8 Claims**



A clamping device holds a workpiece in secured position by engaging the outer side walls thereof after the workpiece had been accurately located on a support from the inside surface thereof. After the workpiece is so located a plurality of spring pressed plungers independently move locking heads longitudinally and at an angle toward the workpiece side walls which are engaged thereby and which retains the workpiece in exact internal surface located position after the locating device is withdrawn.

3,771,781

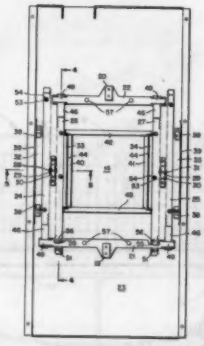
X-RAY CASSETTE HOLDER

Ray R. Lackey, Madeira; Carold B. Henninger, Reading, and Henry J. Schneider, Cincinnati, all of Ohio, assignors to Sybron Corporation, Rochester, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,335

Int. Cl. B25b *11/00;* **F16h** *1/20*

U.S. Cl. 269—218 **11 Claims**



The centering jaws of an x-ray cassette holder are connected to each other by two pairs of racks. The racks in each pair face each other and engage pinion gears rotatably mounted on the holder between the racks. The racks are connected by dovetail joints to crossbars attached to the centering jaws. The dovetail joints permit the ends of the racks to move laterally along the crossbars to compensate for misalignment of the racks. The jaws may be locked in place by a locking assembly attached to one of the jaws. The locking assembly is adapted to grip the top plate of the holder and then press the centering jaws together to grip the film cassette more securely. Means are also provided for adjusting the gripping force exerted on the top plate.

3,771,782

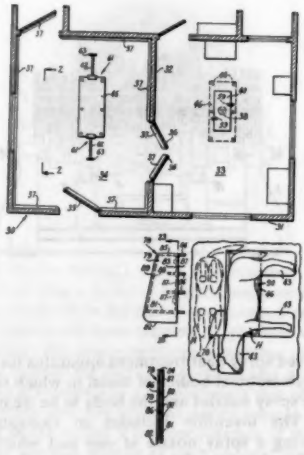
APPARATUS FOR VETERINARY EXAMINATION OR SURGERY OF LARGE ANIMALS

Allen C. Anderegg, Rt. 6, Box 356, Charlottsville, Va.

Filed July 2, 1971, Ser. No. 159,149

Int. Cl. A61d *3/00;* **A61g** *13/00*

U.S. Cl. 269—322 **4 Claims**



A method and apparatus for examining or performing surgery on large animals in which the large animal such as a horse is anesthetized in a completely padded recovery area adjacent

the operating area. The horse is allowed to fall while being supported closely against a padded wall by attendants. The horse is then arranged in lateral recumbency and a low set surgery top is rolled into the recovery area on its own rollers. The horse is rolled into dorsal recumbency by two of the attendants and the surgery top is brought closely adjacent the side of the horse and the horse is rolled onto the table into a lateral recumbency position. Detachable elements are connected to the surgical top for supporting the horse's head, shoulder, neck and legs following which the surgery top is rolled into the operating area and over a supporting platform mounted on the upper end of a hydraulic cylinder base. The surgery top is then locked to the supporting platform and the horse is further anesthetized by passing an endotracheal tube through which to supply Halothane.

The horse is then left in its lateral recumbency or rolled into a dorsal recumbency and supported for the examination and/or operation. The table is then raised to the desired elevation and the required surgery is performed. Following surgery the support platform is lowered and the surgical top is disconnected to be rolled back into the recovery area with the horse thereon. The horse is then rolled from the surgical top onto the padded floor of the recovery area and the surgical top is removed to the operating area.

The apparatus includes the support platform, the surgical top and releasable locks for securing the top to the support platform. Removable handles are provided for each end of the mobile surgical top to permit two or more men to manipulate the table with the horse thereon. The surgical top is provided with a plurality of apertures along its edges and in its top surface to receive and support support panels and support chocks to adequately support the horse in any desired position for surgery. At least one pair of adjustable depending legs are provided on the surgical top to permit the top to be supported with two of its rollers out of contact with the floor when it is desired to prevent movement of the surgical top across the floor.

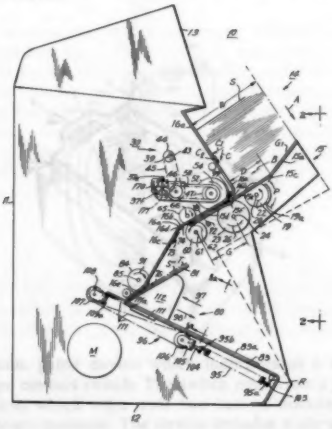
The support platform without the surgical top may, if desired, serve as a table for surgery or examination for smaller and/or younger animals.

3,771,783

MECHANISM FOR FEEDING, SEPARATING AND STACKING SHEETS

George P. McInerny, Andalusia, Pa., assignor to Pennsylvania Research Associates, Inc., Philadelphia, Pa.

Filed Feb. 22, 1972, Ser. No. 227,847
Int. Cl. B65h *1/06*
U.S. Cl. 271—125 **43 Claims**



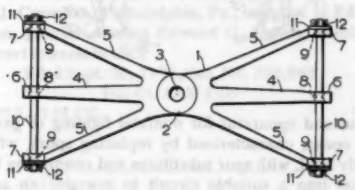
A sheet hopper had multi-angled bottom portions and an angled front side. A segmented wheel protrudes into the bottom portion to separate the lowermost sheet and feeds the sheet to gripper rollers outside the hopper. The hopper angles are such so as to relieve the bottom portion of the full weight or pressure from the stock.

3,771,784

SUSPENDED RECREATIONAL DEVICE WITH ROTATABLE ROD STRUCTURE

Robert Kern, R.R. No. 1, Windsor, Ontario, Canada

Filed Oct. 10, 1972, Ser. No. 296,139
Int. Cl. A63b *3/00*
U.S. Cl. 272—63 **2 Claims**



This invention consists of a recreational and exercising device which is suspended by its center from a ceiling or an upper structural part. The device has, extending downwardly from its center and on each side thereof, a plurality of diverging arms which support a hand gripping bar. This hand gripping bar is free to rotate within the diverging arms. A person or persons using the device, grip the bars, one in each hand, and are thereby suspended freely in the air, whereupon they can swing or perform various forms of gymnastics for pleasure or exercise.

3,771,785

WEIGHT USABLE IN A BARBELL ASSEMBLY

Henning J. Speyer, Chicago, Ill., assignor to Sears Roebuck & Co., Chicago, Ill.

Filed June 29, 1972, Ser. No. 267,696
Int. Cl. A63b *1/02*
U.S. Cl. 272—84 **6 Claims**

A weight adapted for mounting on a bar has a circular shape and a centrally disposed, axially aligned bore formed therein, and includes walls defining a radial slot extending from the bore to the periphery of the weight with the walls defining the slot being disposed at an angle with respect to the axis of the bore. The radial slot in the weight allows the weight to be mounted on a barbell and demounted therefrom without removing a collar or other weight retaining device by passing the barbell through the canted slot of the weight and then aligning the barbell with the axially aligned bore of the weight.

3,771,786

NONFATAL COCK FIGHTING

Thurman N. Bouldin, Route 1, Baird, Tex.

Continuation-in-part of Ser. No. 104,259, Jan. 6, 1971, abandoned. This application Nov. 27, 1972, Ser. No. 309,724

Int. Cl. A01k *29/00*

U.S. Cl. 273—1 E **21 Claims**

Method and apparatus for nonfatal fighting of game fowl such as cocks, characterized by replacing spurs, which are frequently fatal, with spur substitutes and connecting the spur substitutes into a suitable circuit to energize an apprising means when one cock makes a scoring contact with the body of his opponent with his spur substitute. Several specific embodiments are described, including the use of miniaturized batteries and transmitters that may be carried by each cock, and including a central scoring means that is responsive to the respective frequencies of the transmitter serving as the apprising means. The spur substitutes are attached to the legs of a cock by a shank encircling band of substantially uniform lateral cross section and of sufficient dimension to necessarily encircle and enclose at least a portion of the natural spur area.

3,771,787

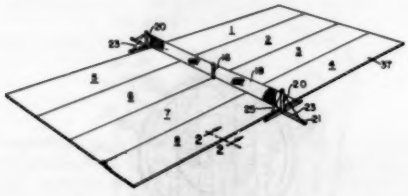
PLAYING COURT SURFACE AND METHOD OF CONSTRUCTING SAME

Sidney B. Wood, Jr., New York, N.Y., assignor to Tennis Services, Inc., New York City, N.Y.

Continuation of Ser. Nos. 794,641, Jan. 28, 1969, Pat. No. 3,577,894, and Ser. No. 113,915, Feb. 9, 1971, abandoned. This application June 29, 1972, Ser. No. 267,381

Int. Cl. A63b *61/00*

U.S. Cl. 273—29 R **10 Claims**



A substantially maintenance-free surface suitable as a playing field has a flat upper face consisting of a rugged synthetic fiber pre-treated with an elastomeric coating which provides the desired abrasion resistance and ball-skid-speed thereon. Unlike artificial grass, no filaments protrude upwardly from the surface.

Where the surface is to be used temporarily indoors or outdoors, an under-cushion is foamed to the underside thereof, which cushion consists of a sturdy, low density, plastic expanded foam having a high coefficient of friction and a permanent "dry" tackiness for holding the surface firmly and without bunching to various surfaces without any fastening means. The surface is light enough to roll up for compact storage and the coating on its upper face is non-tacky to allow rolling up without adhesion.

For permanent indoor or outdoor use, panels of the above described upper face material are provided with underlying panels of closed cell, waterproof plastic foam having negligible expansion and contraction characteristics. Both the upper surface and the underlying foam are stretched over and secured to curbing defining the perimeter of the field so as to prevent bunching during use.

The method of permanent installation according to the invention includes the step of stretching a surface as hereinbefore described over a base area.

3,771,788

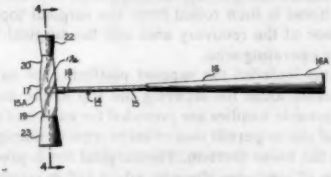
PUTT-CUE DEVICE WITH TWO DIFFERENT SIZED STRIKING HEADS

Michael Hurley, 8475 River Road, and James J. DeClerck, 39444 Dodge Park Drive, both of Sterling Heights, Mich.

Filed Nov. 8, 1971, Ser. No. 196,689

Int. Cl. A63d *15/08*

U.S. Cl. 273—68 **1 Claim**



A putt-cue device is used with a game of skill which combines the technique required in putting a golf ball with the technique required in playing billiards or pool on a conventional billiard or pool table of conventional height. The putt-cue device is a specially constructed and proportioned double-padded-tipped, relatively short handled putt-cue-stick for striking a billiard or pool ball. One of the padded tips of the device is substantially smaller in diameter than the other padded tip for use with close cushion and ball shots with the larger tip being used for clear shots at the ball.

3,771,789

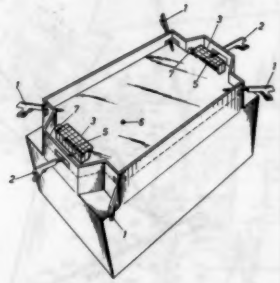
TABLE FOOTBALL APPARATUS

Gerhard Kammerl, Post Natternberg, Rettenbach, Germany

Filed July 19, 1971, Ser. No. 163,873

Int. Cl. A63f *7/06*

U.S. Cl. 273—85 H **2 Claims**



A table football apparatus comprises a playing surface over which the ball is moved by blasts of compressed air from nozzles arranged at the edges of the playing surface. Each nozzle

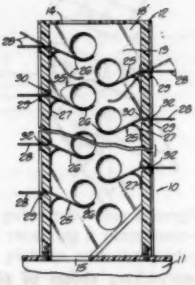
can be in the form of a pistol-grip with a trigger, and is pivotable so as to sweep over the playing surface. Each trigger can be part of an electrical circuit for controlling the supply of compressed air to move the ball. The table football is a hollow sphere with apertured shell.

3,771,790

GAME DEVICE FOR MANIPULATING SEPARABLE PLAYING PIECES

Elizabeth L. Kong, 12331-½ Magnolia Street, El Monte, Calif.

Filed Nov. 3, 1972, Ser. No. 303,608
Int. Cl. A63b *67/00*
U.S. Cl. 273—110 **10 Claims**



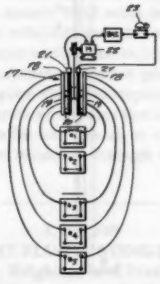
An amusement device challenging the dexterity and skill of players in the progressive advancement of fragile playing pieces along a chute without dismemberment of the playing piece to the embarrassment of the player. A suitable playing piece may be hollow egg-shaped and formed of parts held delicately assembled and enclosing a heavy loose part, preferably of non-spherical shape, effective to fall apart if the playing piece is not carefully maneuvered in play. The chutes are equipped with movable barriers manipulatable by the players to control advance of the individual playing pieces.

3,771,791

CIRCUIT COMPLETION GAME USING A ROTARY, MULTIPLE-CONTACT SWITCH

Nicholas R. Nelson, 710 West North Street, Bellingham, Wash.

Filed Apr. 21, 1972, Ser. No. 246,184
Int. Cl. A63f *9/00*
U.S. Cl. 273—130 AB **1 Claim**



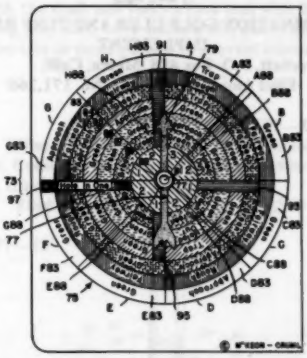
An electronic game device which incorporates a motor-driven multipe contact switch. The switch comprises a pair of contact brushes which wipe over two sets of circularly arranged stationary contacts. The device includes a plurality of game cards stacked one above the other. A number of these game cards have portions of electrical circuits imprinted thereon and also have a square array of holes formed therein for receiving electrically conductive contact pegs. The contact pegs are inserted into a prearranged number of holes in the stacked game cards in order to complete a circuit through a selected one of the game cards. Upon completion of a circuit on one of the game cards by the insertion of the correct number and arrangement of the contact pegs, a motor will momentarily drive the rotatable brush pair over the fixec contacts. The rotating brushes will then randomly come to rest on another pair of fixed contacts that will require a different number and arrangement of contact pegs to again effect completion of a circuit. The switch can further be used on control panels that control automatic machinery.

3,771,792

SIMULATED GOLF GAME APPARATUS

Bernard J. Crumlish, Philadelphia, Pa., assignor to Edwin M. McKeon, Jenkintown and Edward G. Cullen, Maple Glen, Pa., a part interest to each

Filed Sept. 30, 1971, Ser. No. 185,065
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 CG **1 Claim**



A simulated golf game apparatus comprising a game board marked to represent a golf course, a golf ball position areas marked on the golf course in different colors to indicate various golf ball positions for tee shots, fairway shots, shots from te rough, approach shots, trap shots, and putts, a ball marker adapted to be moved by each player from one golf ball position area to another in accordance with the results of the shots taken by the player, and a golf shot executing device including a spinner disk divided by concentric circles into radially disposed annular golf shot rings for each type of golf shot to be executed by the player and distinguished from one another by different colors corresponding to the colors of the golf ball position areas of the game board, the annular rings being divided by radial lines into golf shot result segments marked with golf shot results, and a spinner rotatably connected to the disk at the center of the rings, whereby a player takes a golf shot by spinning the spinner and observing which shot result its pointer end indicates in the appropriate golf shot ring, whereupon the player moves his ball marker to the appropriate ball position area for his next shot.

3,771,793

OPAQUE NARROW-NECKED CONTAINER EXPOSING ENDS OF GAME PLAYING PIECES

Sandy F. Kraemer, 430 N. Tejon St., Colorado Springs, Colo.

Filed Feb. 17, 1972, Ser. No. 227,220
Int. Cl. A63b *71/06*
U.S. Cl. 273—139 **6 Claims**

A game of chance device having an opaque container with a reduced neck forming an upstanding opening, utilizes a plu-

rality of long-handled, paddle-shaped playing pieces which fit in the container with their ends extending from the opening.

Game indicia is placed on the enlarged end of each playing piece which is inserted into the container and then randomly withdrawn one-by-one to disclose the game indicia thereon.

3,771,794
COMBINATION GOLF CLUB AND TURF REPAIR IMPLEMENT

Cyril C. Crockett, P.O. Box 488, Mecca, Calif.

Filed Aug. 12, 1971, Ser. No. 171,266
Int. Cl. A63b *53/00*
U.S. Cl. 273—162 F **8 Claims**

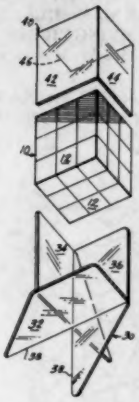
A combination golf club and turf repair implement which is attached to and carried by the club, the implement including a body mounted at the hand grip end of the club shaft and having a pair of spiralled turf penetrating tines which are normally shielded by a flexible cover, but which may be exposed for use and manipulated by means of the club shaft in repairing a turf scar.

3,771,795
REARRANGEABLE, CHARACTERISTIC BLOCKS

Cameron D. Flanigen, P.O. Box 82565, Hapeville, Ga.

Filed Feb. 14, 1972, Ser. No. 225,788
Int. Cl. A63f *9/12*
U.S. Cl. 273—157 R **16 Claims**

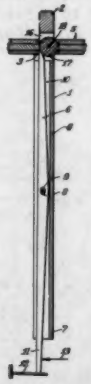
A puzzle and game consisting of a plurality of plastic blocks with colors, patterns, or other characteristics on different sides stacked together in a cube or other parallelepiped with the colors or other characteristics matched in a certain selected pattern so that the cubes may be separated into individual blocks and then replayed seeking to establish either the same pattern or a different one. There is a large number of different possibilities and patterns which may be made. In one form the three-dimensional cube made of 27 blocks having a three-color pattern is supported in a clear plastic stand tilted to present three support sides resting on legs. The stand may



be made from interlocking sheets of plastic material. In another form the blocks are shipped in a sheet plastic cube which comes apart into two three-sided sections one of which has a notch in the apex in which the sharp apex of the other may rest and provide a stand for the blocks resting on a table. The device is an amusement puzzle and a conversation piece.

3,771,796
RECORD CHANGER SPINDLE

Anthony D. Szpak, Parma, Ohio, assignor to Avnet, Inc., New York, N.Y.

Filed Aug. 16, 1971, Ser. No. 171,863
Int. Cl. G11b *17/04*
U.S. Cl. 274—10 S **10 Claims**

The subject invention provides means for automatic lowering onto a turntable, phonograph records, one at a time, from a stack of records which may contain records having a large variation in hole geometry including records of a thickness at the hole of less than the standard thickness heretofore in general use. The present invention will feed records of less than standard thickness with records of standard thickness.

Thick and thin records are successfully dispensed indiscriminately by my invention. The invention will also operate satisfactorily where the configuration of the hole has been damaged as by wear.

3,771,797

GUIDE FOR PHONO-PICK-UP

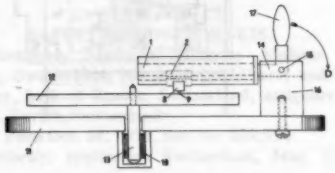
Karl Braun, Passauer Str. 38, 8399 Rotthalmunster, Germany

Filed Feb. 8, 1971, Ser. No. 113,579

Claims priority, application Germany, Feb. 6, 1970, P 20 05 331.0

Int. Cl. G11b *3/10*

U.S. Cl. 274—23 A **1 Claim**



Phono-pick-up guide providing a longitudinal permanent-magnet guideway receiving a permanent-magnet guidepiece which carries the pick-up, with the guidepiece having in the guideway clearance throughout, and being by magnetic forces held hovering for movement and at rest therein without contact therewith.

3,771,798

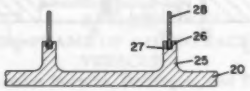
METHOD OF REPAIRING KNIFE EDGE FINS IN SPACER FLUID SEALS

George L. McDonald, 6806 E. 74th, Tulsa, Okla., and Michael L. Jackson, 2216½ N. Sheridan, Tulsa, Okla.

Filed May 11, 1972, Ser. No. 240,829

Int. Cl. F16j *15/16*

U.S. Cl. 277—9 **10 Claims**



Disclosed herein is a method for the repair of knife edge fins generally utilized as spacer fluid seals in, for example, compressor and turbine rotating and stationary members. The knife edge fins become worn after extreme use through subjection to high temperature, corrosive gases and abrasive contacting, so as to require frequent replacement thereof. The method disclosed herein eliminates the necessity of replacing the entire knife edge fin and spacer or other apparatus upon which the fin may be mounted through a means of repairing the same.

3,771,799

MULTI-ELEMENT FLUCTUATING PRESSURE SEAL

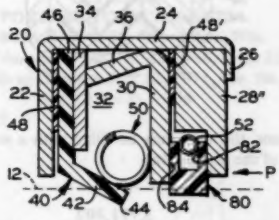
Stephen A. Sekulich, Brighton, and Frederick R. Hatch, Ann Arbor, both of Mich., assignors to The Mather Company, Toledo, Ohio

Filed Aug. 20, 1971, Ser. No. 173,553

Int. Cl. F16j *15/32, 15/38*

U.S. Cl. 277—65 **18 Claims**

An annular housing having an outer flanged frusto-conical or substantially obtuse angled cross-section polytetrafluoroethylene lip seal urged into contact with a rotating shaft by a garter spring, and at least one inner polytetrafluoroethylene seal separated from the outer seal in the housing by an annular partition which forms a chamber in the housing between the partition and the outer seal. The inner seal may have either an obtuse angled cross-section and



urged into contact with the shaft by its own residual forces, or it may have a substantially rectangular cross-section and be rotated with the shaft and form a face seal with the partition. The housing may also have outside the outer seal a dust lip seal and also one or more gaskets to prevent internal leakage.

3,771,800

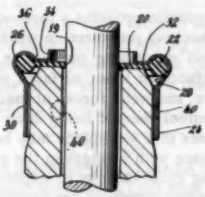
VALVE STEM SEAL

Donald R. Wilson, Summerville, S.C., and Nicholas P. Flonc, Hamden, Conn., assignors to Eagle-Picher Industries, Incorporated, Cincinnati, Ohio

Filed Aug. 24, 1972, Ser. No. 283,549

Int. Cl. F16j *15/00*

U.S. Cl. 277—187 **7 Claims**



A two part assembly for providing a seal around a shaft at the end of a guide comprises an annular elastomeric sealing ring having a thin center portion which clings to the shaft and a thicker peripheral bead which is seated in a circular outwardly expanded position of a retainer cap the lower portion of which comprises a skirt adapted to be pressed over the end of the guide, and the upper portion of which extends radially inward part way over the sealing ring and terminates in an edge portion which is angled upwardly away from the thin portion of the sealing ring.

3,771,801

SEALING DEVICE

John A. Burke, Rocky River, Ohio, assignor to Greene, Tweed & Co., Inc., North Wales, Pa.

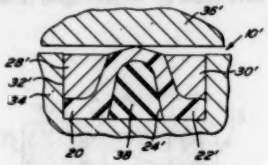
Filed June 5, 1972, Ser. No. 259,640

Int. Cl. F16j *15/24*

U.S. Cl. 277—188 **8 Claims**

A double acting sealing assembly including a modified T-shaped sealing ring and mating substantially trapezoidal shaped back-up rings or anti-extrusion rings are provided. An annular void is provided at the static surface of the sealing

ring. The sealing surface of the ring is formed by converging end faces which meet at a sharp sealing edge. In an alternative



embodiment, the void may be filled with a material different from that of the sealing ring.

3,771,802

APPARATUS FOR CONTROLLING CHUCKING PRESSURES ON WORKPIECES IN MACHINE TOOLS

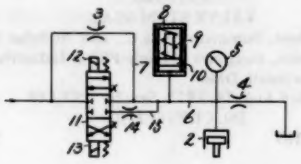
Sadakazu Hiramatu; Tomoyosi Egusa, and Hiromiti Tateisi, all of Iwata, Japan, assignors to Toyo Bearing Manufacturing Company Limited, Osaka-shi, Japan

Filed May 5, 1971, Ser. No. 140,368

Claims priority, application Japan, Dec. 5, 1970, 45/107804

Int. Cl. B23b *31/30*; F15b *31/04*

U.S. Cl. 279—4 **1 Claim**



The present invention provides a method of and apparatus for controlling chucking pressures on workpieces in machine tools carrying out machining operations by chucking the widths, outer surfaces or inner surfaces of workpieces with hydraulic pressure, magnetic forces or mechanical force, the principal arrangement thereof being such that in order that the internal stresses in a workpiece may be dissipated or relieved in accordance with changes in the cutting speed in an automatic working cycle thereby to improve the accuracy of finishing, the chucking pressures are properly adjusted. It also provides methods of and apparatuses for controlling chucking pressures on workpieces in machine tools, having sub-arrangements based on said principal arrangement. Advantages and details of such arrangements will be made clear.

3,771,803

DEVICE FOR FEEDING PRESSURE FLUID FROM A STATIONARY PRESSURE SOURCE INTO A ROTATING MEMBER

Karl Hiestand, Pfullendorf, Germany, assignor to SMW-Spanneinrichtungen Schneider & Weisshaupt, Friedrichshafen, Germany

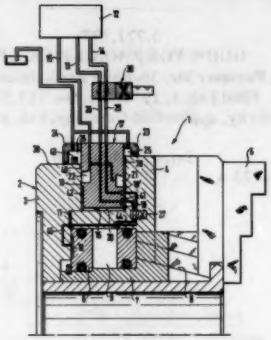
Filed Feb. 10, 1972, Ser. No. 225,093

Claims priority, application Germany, Mar. 10, 1971, P 21 11 355.3

Int. Cl. B23b *31/30*; F15b *13/04*

U.S. Cl. 279—4 **13 Claims**

A non-rotatable ring is arranged within an annular recess in a circumferential portion of a rotatable cylindrical member. The facing end walls at each end of the recessed portion of the cylinder and of the ring are provided with annular slots defining pressure transmitting regions and pressure throttling zones. A pressure fluid feeding conduit is arranged within the non-rotatable ring and opens into one of the pressure transmitting regions. The opposite pressure transmitting regions are interconnected and cooperate with the throttling zones in such a manner as to cause axial vibrations of the non-rotational ring resulting in a self-adjusting pressure balance in both interspaces when the pressure fluid is applied into the feeding conduit.



3,771,804

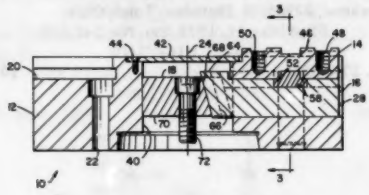
COMPOUND CHUCK STRUCTURE

William G. Platt, 3930 Harvard Rd., Detroit, Mich.

Filed Mar. 18, 1971, Ser. No. 125,500

Int. Cl. B23b *31/16*

U.S. Cl. 279—121 **7 Claims**



Compound wedge type chuck structure including a lower slide, a top jaw and inclined wedge and pin structure positioned between the lower slide and top jaw for multiplying the movement of the top jaw and the force applied by the top jaw in response to radial movement of the lower slide in engagement through an inclined surface with an actuating drawbar on application of actuating force to the drawbar.

3,771,805

SKI BODY

Yoshikatsu Ishida, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Feb. 16, 1971, Ser. No. 115,236

Claims priority, application Japan, Feb. 19, 1970, 45/16357

Int. Cl. A63c *5/00*

U.S. Cl. 280—11.13 T **2 Claims**

In a ski body of a laminated construction, the core structure employed therein is divided into a forward up-turning portion made of non-foamable material and a basic core portion made of a hard type foamed resin bonded together into an integral core structure, and an upper and lower surface plates made of a reinforcing material are laminated on the upper and lower

surfaces of the core structure. Preferably, the forward upturning portion of the core structure is made of ABS or polycarbonate resin, and the joining line between the two portions is so configurated that the variation of the mechanical strength from one portion to the other is gradual.

3,771,806

SAFETY BINDING FOR SKIS

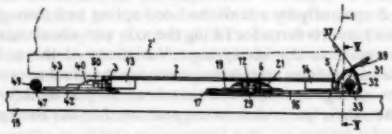
Hans Hinterholzer, Saalbach, Austria; Alphons Saiko, Kilchberg, Switzerland; Reinhold Spieldiener, and Robert Spieldiener, both of Zurich, Switzerland, assignors to Intamin AG, Zurich, Switzerland

Filed Dec. 20, 1971, Ser. No. 209,954

Claims priority, application Switzerland, Mar. 5, 1971, 3211/71

Int. Cl. A63c *9/081*

U.S. Cl. 280—11.35 D **13 Claims**



A ski safety binding comprising a front binding unit and a backbinding unit, parts of these units being mounted on the bottom side of the sole of the ski boot and parts being mounted on the ski trunk, for releasable engagement within each unit, whereby the engagement in each unit is obtained by a pair of jaws under spring tension which may be overcome by extraordinary movement of the boot sole so as to be released from the engagement.

3,771,807

SUPPORTING FRAME OF A ONE-TRACK SLIDING VEHICLE

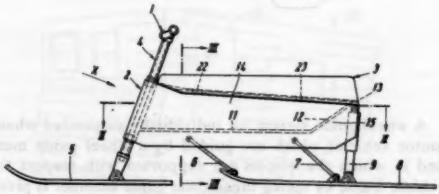
Ferdinand Alexander Porsche, Doffingen, and Theodor Bauer, Leinfelden, both of Germany, assignors to Firma Dr.-Ing. h.c.f. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Continuation of Ser. No. 835,940, June 24, 1969. This application Oct. 28, 1971, Ser. No. 193,592

Claims priority, application Germany, Aug. 2, 1968, P 17 80 122.8

Int. Cl. B62b *13/04*

U.S. Cl. 280—16 **25 Claims**



A one-track, steerable sliding vehicle or sled consisting essentially of a supporting frame with a front and rear runner attached thereto and a steering mechanism. The steering mechanism is associated with the front runner and the rear runner is connected to the frame by guide and/or spring elements. The supporting frame is formed of a one-part or multipartite, rigid hollow body manufactured from a synthetic material which, on one hand, can withstand all stresses and loads during driving and, on the other hand, can be easily transported.

3,771,808

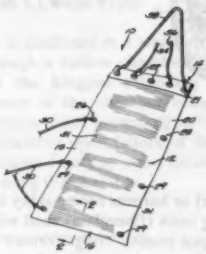
PORTABLE CARCASS SKID

Henry Duerst, 4813A N. 66th St., Milwaukee, Wis.

Continuation-in-part of Ser. No. 859,958, Sept. 22, 1969, abandoned. This application July 12, 1971, Ser. No. 161,642

Int. Cl. B62b *15/00*

U.S. Cl. 280—19 **2 Claims**



A portable skid for hauling game from the field which comprises a rectangular sheet of plastic having a high tear strength and provided with reinforced apertures along the side margins and forward margin. When not in use, the skid is rolled in a coil and carried on the shoulder by a sling. When in use, the game carcass is placed on the unrolled skid and cords tied between the reinforced apertures on the side margins to form an upwardly open U-shaped channel around the carcass with the narrow bottom web interconnecting the channel side walls functioning as a runner. A rope secured to reinforced apertures in the forward margin is used to drag the skid. In one embodiment of the invention, spaced bands having a stiff pile or fiber surface on the upper surface of a plastic sheet prevent the carcass from sliding off the skid.

3,771,809

DEVICE FOR TRANSPORTING LOADS ON UNEVEN OR SHIFTING GROUND, AND ALSO FOR LAUNCHING SMALL BOATS

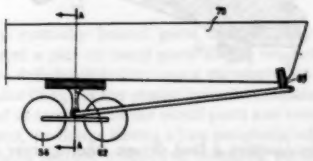
Patrick Carn, 81, rue de Benodet (Sud-Finistere), Quimper, France

Division of Ser. No. 889,258, Dec. 30, 1969, abandoned. This application Nov. 15, 1971, Ser. No. 198,675

Claims priority, application France, Dec. 31, 1968, 68183060; June 13, 1969, 6919812; Nov. 13, 1969, 6939028

Int. Cl. B60p *3/10*

U.S. Cl. 280—47.13 B **1 Claim**



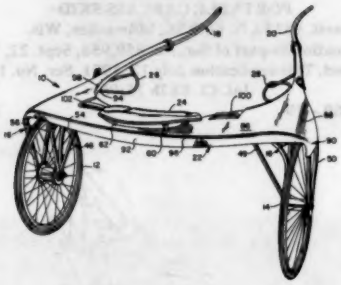
The invention concerns a device for transporting loads on untreated, broken land such as uneven or shifting ground, and more particularly a device adapted for launching small boats.

3,771,810

HARNESS RACING SULKY

Ray V. Barnett, P.O. Box 104, Kahlotus, Wash.

Filed Oct. 22, 1971, Ser. No. 191,707
Int. Cl. B62c 1/08
U.S. Cl. 280—63 **4 Claims**



A horse cart or harness racing sulky comprises a fiber filled thermosetting resin (fiberglass) shell which partially encapsulates a U-shaped trussed bridge formed of metal tubing which has two wheels mounted on the downwardly depending legs thereof, and joins therewith bracing struts also formed of metal tubing extending upward from the wheel hubs to the fiberglass shell for partial encapsulation therein, and horse-flanking shafts protruding forwardly from the vicinity of the U-shaped trussed bridge. The fiberglass shell is preferably fabricated with bright colored or glistening metallic flake pigments, and has a gently arched top portion curving downward along its periphery into downwardly depending flanges and wheel pants. The combination of the fiberglass shell and the partially encapsulated U-shaped trussed bridge, braces, and horse flanking shafts comprise an extremely strong, lightweight, safe, weatherproof, rigid, unitary sulky having a graceful and aesthetically pleasing appearance.

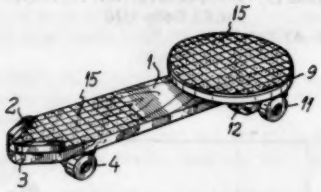
The sulky further comprises stirrups adjustably mounted on the shafts, a seat mounted centrally above the U-shaped trussed bridge, and conventional harness anchorage means.

3,771,811

CHILD'S COASTER

Aldaberto Costa De Campos Bueno, Rua Proffesor Paulino Longo, Sao Paulo Sp., Brazil

Filed Aug. 16, 1972, Ser. No. 281,059
Int. Cl. B62k 9/00
U.S. Cl. 280—87.04 A **4 Claims**



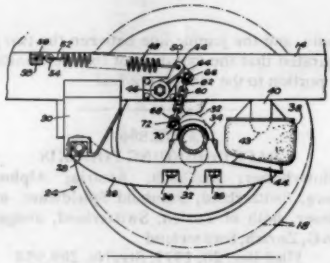
In toy coasters a foot driven steering rear element and a rigid elongated platform for supporting the left foot are provided both the front sections of the rigid base and pivotable rear steering element being provided with wheeled frames having means for regulating the amplitude of the angular displacement of the foot driven steering element.

3,771,812

AIR SUSPENSION WITH IMPROVED AXLE LIFTING STRUCTURE

William C. Pierce, and Paul W. Fuller, both of Muskegon, Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Apr. 25, 1972, Ser. No. 247,265
Int. Cl. B60g 17/00
U.S. Cl. 280—124 F **14 Claims**



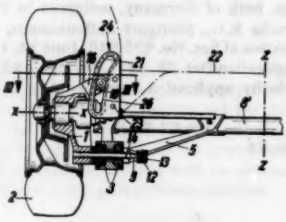
Each of a pair of levers pivoted on the vehicle frame is urged upwardly by a tensioned coil spring and through a link (chain), exerts force for lifting the axle and wheels upon relief of pressure in the air springs. Variations of the coil spring force and of lever arms acting between the pivot axes and axes of the springs and links are correlated so that the lifting force on the axle is less in downward position than in raised position.

3,771,813

WHEEL SUSPENSION FOR INDIVIDUALLY SUSPENDED VEHICLE WHEELS

Erich Stotz, Rummelshausen, Germany, assignor to Dr. -Ing. h.c.F. Porsche KG, Stuttgart-Zuffenhausen, Germany

Filed Dec. 15, 1971, Ser. No. 208,226
Claims priority, application Germany, Dec. 16, 1970, P 20 61 909.4
Int. Cl. B62d 17/00
U.S. Cl. 280—124 A **25 Claims**



A wheel guide system for individually suspended wheels of motor vehicles which are guided by a wheel guide member and in which the wheels are supported with respect to the vehicle frame by spring means; the guide member is pivotally secured for universal movement at the vehicle frame and/or at the wheel carrier while the wheel carrier includes a guide arm arranged at a distance to the guide member, by means of which the wheel carrier is guided in a curved track secured at the vehicle body.

3,771,814

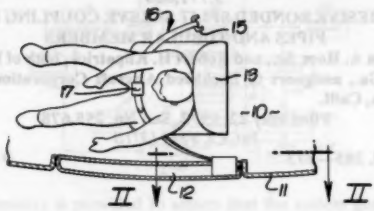
FREE-SPOOLING RETRACTOR FOR VEHICLE OF RESTRAINT SYSTEM

Floyd Hahn, Lake View Terrace, Calif., assignor to American Safety Equipment Corporation, New York, N.Y.

Filed May 22, 1972, Ser. No. 255,440

Int. Cl. B60n *21/02*

U.S. Cl. 280—150 SB **6 Claims**



A safety restraint system for use in a vehicle, such as an automobile, includes a lap strap which in the active position circumscribes the lap of an occupant on a vehicle seat the outboard end of the strap being connected to a retractor. The retractor is mounted on the lower rearward corner portion of the vehicle door adjacent the seat and is of the type commonly known as an auto-lock retractor. The retractor includes a rotatably mounted reel around which the strap is wound and from which it may be protracted, a ratchet reel mounted on the reel and rotatable therewith, and locking means including a pawl for selective engagement with the ratchet wheel. In normal operation, protraction of the strap to permit the strap to be secured around the occupant followed by slight retraction moves the pawl into engagement with the ratchet wheel to prevent further protraction thus precluding the occupant from moving forward in the event that the vehicle is in a collision. Free spooling means is provided which includes a pivotally mounted lever, one end of which is in selective engagement with the pawl to render the pawl inactivatable so that the reel will free-spool and the other end of which is engageable with a trip arm mounted on the vehicle adjacent the rearward lower end of the door. When the door is closed, the pawl is activatable and the retractor functions in its normal manner. When the door is opened, the reel is permitted to free-spool so that the strap may be protracted while the door is opening and simultaneously moving the strap to an out-of-the-way position without any active participation on the part of the occupant enabling the occupant to leave the vehicle.

3,771,815

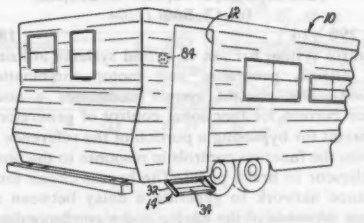
EXTENSIBLE STEP

Ralph F. Bridges, 6838 East Floral, Selma, Calif.

Filed Apr. 13, 1972, Ser. No. 243,815

Int. Cl. B60r *3/02*

U.S. Cl. 280—166 **3 Claims**



An extensible step particularly suited for use with recreational vehicles such as campers, mobile homes, trailers and the like. The step is characterized by a base frame mounting the step beneath the doorway of a recreational vehicle, a horizontally displaceable tread supported within the base frame, and a remotely controlled prime mover coupled with the tread for selectively imparting horizontally directed, substantially rectilinear motion to the tread for repositioning the tread relative to a stowed position beneath the vehicle and an operative position laterally extended therefrom.

3,771,816

KINGPIN ASSEMBLY

Robert E. Hord, Jr., Box 635, Granite City, Ill.

Filed Mar. 15, 1972, Ser. No. 234,858

Int. Cl. B62d *53/08*

U.S. Cl. 280—433 **10 Claims**

A kingpin assembly is disclosed in a trailer frame with the kingpin extending through a hollow chamber defined by the frame members with the kingpin extending through the chamber and the interior of the chamber being pressurized with a dye carrying and/or odor producing substance which will escape from the chamber upon failure of the connection of the kingpin to the trailer frame or upon failure of any part of the trailer frame forming the chamber.

3,771,817

JOINT OF TWO MUTUALLY BRACES METAL PARTS COVERED WITH PLASTIC MATERIAL

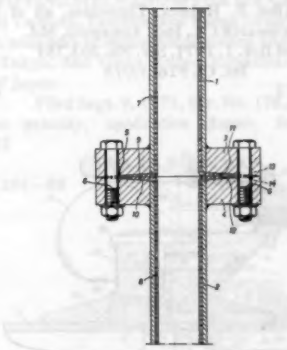
Ernst Schnabel, Offheimer Weg 5, Limburg (Lahn), Germany

Continuation of Ser. No. 72,624, Sept. 16, 1970, abandoned. This application Feb. 9, 1973, Ser. No. 331,225

Claims priority, application Germany, Sept. 18, 1969, P 19 47 306.4

Int. Cl. F16l *9/14, 23/00*

U.S. Cl. 285—55 **6 Claims**



Joint of two mutually braced parts covered with plastic material includes a pair of metal parts having respective opposing surfaces defining a hollow space therebetween, and at least one annular flange of the plastic material extending from the covering of at least one of the metal parts and received in the hollow space, the flange having a free peripheral edge. The opposing surfaces include respective clamping surface portions in clamping engagement with the flange, the clamping surface portions being farthest apart in the vicinity of the flange and approaching toward one another radially at the free peripheral edge of the flange.

3,771,818

APPARATUS FOR THE ATTACHMENT OF A HOSE OR A COUPLE TO A PIPE END

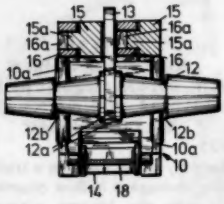
Karl Weinhold, Im Jagdfeld 43, 4040 Neuss, Germany

Filed Oct. 12, 1971, Ser. No. 188,298

Claims priority, application Germany, Oct. 22, 1970, P 20 51 987.3

Int. Cl. F16l 33/22

U.S. Cl. 285—242 9 Claims



In an apparatus for attaching a hose or a rigid pipe connection to a pipe end by using two rigid half shells surrounding the pipe end, the half shells comprising interlocking hinged arms disposed radially with respect to the axle of the hinge and a radial mounting support carrying the pipe end, the support engaged between the hinged arms, the improvement comprising: two hinged arms of one half shell each arm exhibiting a link pin extending in the direction of the axis of the hinge and two hinged arms of the other half shell each arm exhibiting an indentation receiving said link pin, the smallest distance between the hinged arms exhibiting the indentation being at least as large as the largest axial dimension of the hinged arms exhibiting the link pins and the mounting support being disposed in the space provided between the hinged arms when the link pins have been inserted in the indentation.

3,771,819

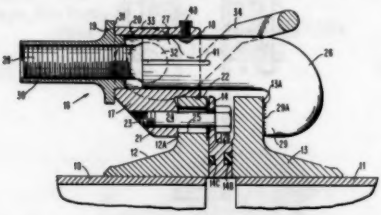
AXIALLY AND ROTATABLY MOVABLE FLANGE CONNECTOR

Joseph J. Hitchins, III, Annapolis; Carl H. Hohenberger, Baltimore, and Allen E. Holmes, Timonium, all of Md., assignors to Hydrasearch Co., Inc., Annapolis, Md.

Filed Dec. 1, 1971, Ser. No. 203,751

Int. Cl. F16l 37/18

U.S. Cl. 285—312 6 Claims



A modular flange connector for connecting the terminal flanges of conduits, the connector comprising clamps for attachment to one flange of one conduit and for quick connection to the flange of the other conduit. Each clamp comprises a tubular base in which is slideably disposed a clamping hook having a central cylindrical shaft portion, a threaded rear shaft portion and a hook shaped forward portion. The threaded rear shaft portion is engaged by a sleeve shaped adjusting nut which cooperates with the base to effect axial movement of the clamping hook in the tubular base. A cam is mounted on the base and is provided with a handle to effect rotation of the cam, the cam being adapted for engagement with the adjusting nut so that upon rotation of the cam additional axial movement of the clamping hook is effected. The clamping hook is capable of axial movement and rotational movement, there being a catch provided so that the hook may be rotated clear of the mating flange to facilitate coupling and uncoupling of the flanges.

3,771,820

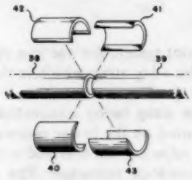
ADHESIVE BONDED SPLIT SLEEVE COUPLING FOR PIPES AND TUBULAR MEMBERS

Warren A. Hoss, Sr., and Robert H. Kilpatrick, both of Marietta, Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed May 22, 1972, Ser. No. 255,678

Int. Cl. F16l 13/10

U.S. Cl. 285—373 9 Claims



A split, sleeve-like structure of identical cross-sectional elements, which when secured to a pipe or tubular member joint by a curable adhesive provides a permanent joint of strength greater than the joined pipe or tubular members, the joint being leak-proof with a connector or coupling at as little as 20 percent of the weight of mechanical pipe or tube connectors.

Overlapping portions of adjacent sleeve elements include flat confronting surfaces to permit sliding in a linear relationship relative to each other as they are moved radially relative to the members being joined whereby an increase in the joint bond line is attained, as well as manufacturing tolerance variations in the outer diameter of the members being jointed becomes substantially immaterial to the completed joint strength. Placement of the sleeve elements over a leak or hole in the wall of a pipe or conduit, or other damaged portion thereof, permits repair of the leak or damaged portion without cutting of the pipe or conduit.

This sleeve coupling permits joining of any metal or composite (e.g., carbon fiber, boron fiber, glass fiber, etc.) pipe or tubular members, as well as the joining of dissimilar materials, and whether the jointed members are of the same or different size diameters.

3,771,821

ELECTRONIC POWER CONTROL AND LOAD RATE CIRCUIT

Donald H. Rist, and Joseph D. Schneider, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

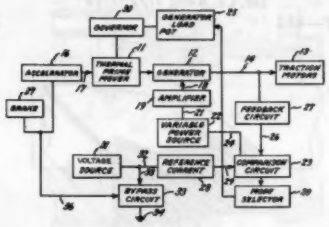
Filed Sept. 25, 1972, Ser. No. 291,688

Int. Cl. B60l 11/04

U.S. Cl. 290—14 18 Claims

A control system for use in hybrid systems utilizing combustion engine, generator, and motor combinations for propulsion. The control system comprises a source of reference current for functional control of generator output and a circuit for bypassing a portion of the reference current away from the function controls in response to the position of an accelerator or brake pedal. The bypass circuit includes a capacitance network to generate a delay between any acceleration demands of the engine and a corresponding application of increased generator load, thereby eliminating engine bogging and reducing the production of smoke upon rapid increases of power demand. Potentiometers are adjustable to set

the minimum idling speed of the engine and the maximum reference current to be applied for functional control. Fail



safe circuitry is provided to assure that the system goes to a safe condition in the event of the failure of critical components.

3,771,822

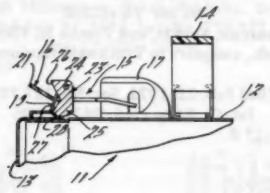
SAFETY CATCH FOR LUNCH KIT

Vernon D. Bell, Westerly, R.I., assignor to King-Seeley Thermos Company

Filed Sept. 29, 1971, Ser. No. 184,729

Int. Cl. E05c *13/14*

U.S. Cl. 292—250 **10 Claims**



A lunch kit or the like embodying an improved and simplified latch that precludes accidental opening of the lunch kit unless the lunch kit is properly oriented. The latch includes a gravity biased safety member that precludes the release of the latching member until the lunch kit is properly oriented.

3,771,823

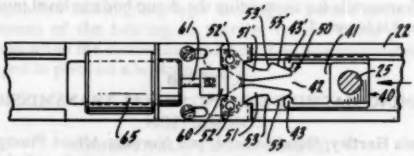
ELECTRICALLY CONTROLLED HOLD-OPEN DEVICE

Raymond H. Schnarr, Princeton, Ill., assignor to Schlage Lock Co., San Francisco, Calif.

Filed Feb. 24, 1972, Ser. No. 229,076

Int. Cl. E05c *17/08*

U.S. Cl. 292—270 **9 Claims**



An electrically releasable hold-open device for use with a door closing mechanism employing a latch device that engages an element reciprocating in a trackway. The latch device has a pair of arms that are controlled by a solenoid. The solenoid, when energized, operates a wedge to spread the arms. The arms in spread position perform a latching function in cooperation with a cavity on the reciprocating element. The solenoid when deenergized deactivates the latching function.

3,771,824

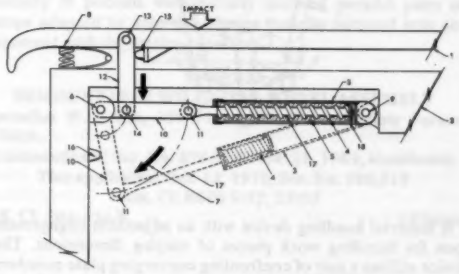
VEHICLE BUMPER

Lindsay M. Applegate, 7045 Molokai Drive, Paradise, Calif.

Filed Feb. 14, 1972, Ser. No. 225,724

Int. Cl. B60r *19/04*

U.S. Cl. 293—84 **3 Claims**



A vehicular bumper comprising means for absorbing impacts by a combination of springs and hydraulic energy absorption activated by mechanical linkage that increases the rate of energy absorption and resistance to impact as functions of the displacement of the bumper relative to the vehicle.

3,771,825

GRIPPING MECHANISM FOR MANIPULATOR

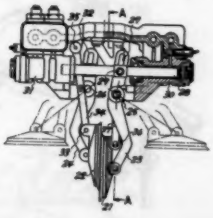
Tominori Yamada, Tamano, and Syugo Douno, Hyogo, both of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, and Glory Kogyo Kabushiki Kaisha, Hyogo, both of Japan

Filed Sept. 9, 1971, Ser. No. 178,861

Claims priority, application Japan, Sept. 16, 1970, 45/81062

Int. Cl. B66c *1/48*

U.S. Cl. 294—88 **1 Claim**



A gripping mechanism capable of gripping a large size plate on the side portion thereof. The mechanism has a number of gripping members and the gripping members are arranged in zigzag relation at one side, and the opposite gripping members are in staggered relation.

3,771,826

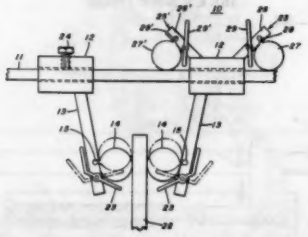
ADJUSTABLE MATERIAL HANDLING DEVICE

Anthony Merola, Pittsburgh, Pa., assignor to Amerola Products Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 825,369, May 16, 1969, Pat. No. 3,653,708. This application Nov. 10, 1971, Ser. No. 197,223

Int. Cl. B25b *3/00, 3/00*

U.S. Cl. 294—114 8 Claims



A material handling device with an adjustable engagement span for handling work pieces of varying dimensions. The device utilizes a pair of confronting converging plate members with associated friction rollers for engaging the workpiece, with at least one of the plate members depending from a base member which is slidably mounted upon a frame member. The base member is slidable to adjust the span between the converging plate members and the friction rollers associated therewith, whereby the device can be used to engage workpieces of various dimensions.

3,771,827

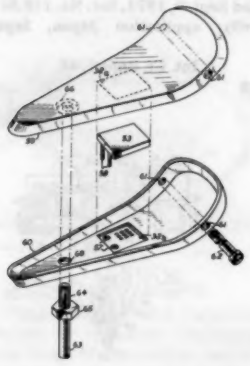
COMBINATION BICYCLE SEAT

Virginia R. Winfree, 321 Rutledge Dr., S. Datona, Fla.

Filed June 11, 1971, Ser. No. 152,157

Int. Cl. B62j *1/00*

U.S. Cl. 297—192 4 Claims



The bicycle seat of this invention comprises a seating arrangement that includes structure defining a compartment that may be used to house a radio. In one embodiment a two-piece seat is provided with radio housing structure between and within the two piece seat.

3,771,828

SEATING AND RECLINING FURNITURE UNIT

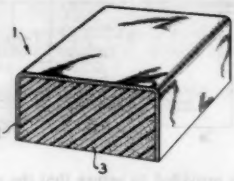
Henry Schwitters, Burgstrasse 8, Wittmund, Germany

Filed Oct. 29, 1971, Ser. No. 193,803

Claims priority, application Germany, Oct. 30, 1970, P 20 53 348.6

Int. Cl. A47c *7/22, 7/14*

U.S. Cl. 297—452 2 Claims



A seating and reclining furniture unit having a compressible foam core, constructed from a preferably rectangular-shaped mold formed with upholstery material. The corners of the mold are mitred or staved in inwardly, and coated with plastic, to secure the mold in its configuration. Liquid foam is then poured into the mold to form an integral furniture unit from the upholstery material and the compressible foam.

3,771,829

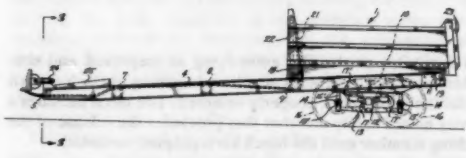
DUMP TRAILER

Russell E. Breazeale, Seattle, and Tyman H. Fikse, Enumclaw, both of Wash., assignors to Truckweld Equipment Co., Seattle, Wash.

Filed Feb. 22, 1972, Ser. No. 227,785

Int. Cl. B60p *1/16;* B62d *63/06*

U.S. Cl. 298—17 R 7 Claims



Two straight rails converging forwardly to an apex are connected at spaced locations by cross members to form a frame. Dual axles support opposite ends of rockers mounting the rear portion of the frame. A trailer hitch secured on the top of the frame apex, when connected to a truck, trims the frame in forwardly and downwardly sloping attitude. Rearwardly and downwardly tapered sills mounted on the bottom of a dump body converge forwardly corresponding to the convergence of the frame rails for supporting the dump body in level position when it is lowered.

3,771,830

MINING MACHINE SENSING SIGNAL TRANSMISSION CONNECTION

Dennis Hartley; Derek Alford, and Norman Albert Plumpton, all of Burton-on-Trent, England, assignors to Coal Industry (Patents) Limited, London, England

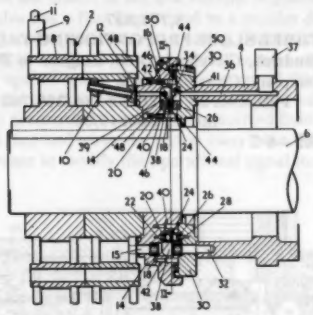
Filed Dec. 7, 1971, Ser. No. 205,694

Int. Cl. E21c *35/24;* H01r *39/56*

U.S. Cl. 299—1 8 Claims

A mineral mining machine having a rotary cutter and a probe on the cutter head which senses the cutting horizon of the cutter head relative to boundaries of the mineral seam and

which derives an electric signal which is fed to control means on the body of the machine for controlling the machine's



steering mechanism. The signal is conveyed from the rotating cutter to the non-rotating body via two spaced annular plates arranged as a capacitor.

3,771,831

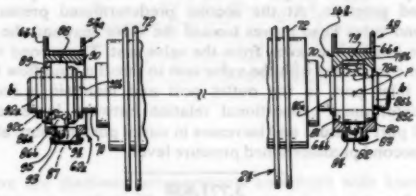
PAVEMENT CUTTING MACHINE-CUTTER BEARING ASSEMBLY

Cecil W. Hatcher, 1235 Wilson Drive, West Covina, and Gene Warner, 8230 Millergrove Drive, Whittier, both of Calif.

Filed July 31, 1972, Ser. No. 276,322

Int. Cl. E01c *23/09*

U.S. Cl. 299—39 **3 Claims**



Pavement cutting machine having an improved cutter assembly wherein two rotary cutters are arranged end to end. Each cutter has a shaft with bearings at each end of the shaft, the bearings being supported by floating beams each operated by a hydraulic cylinder in order to force the cutter to the work or lift it. The outer end of each shaft has a pulley for a belt connected to an engine to rotate the cutter. The bearing at the outer end of the shaft and adjacent to the drive pulley is a non-expansion self-aligning type bearing arranged to tilt on a fixed axis or point while the bearing at the inner end of the shaft is an expansion self-aligning type bearing to permit horizontal movement of the bearing to thereby relieve stress on the bearings when the cutter shaft is tilted. The floating beams are arranged to pivot on a horizontal axis.

3,771,832

ADJUSTABLE TREAD WHEEL

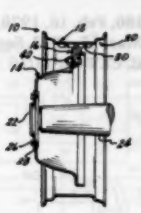
Steve F. Sipovic, and Herman A. Steinkraus, both of Mendota, Ill., assignors to Motor Wheel Corporation, Lansing, Mich.

Filed Dec. 13, 1971, Ser. No. 207,368

Int. Cl. B60b *23/12*

U.S. Cl. 301—9 TV **7 Claims**

An axially adjustable tread wheel with an outer rim for mounting a tire having a plurality of circumferentially spaced axially extending driving members on the inner periphery and a central disc adapted to be connected in a plurality of axially spaced positions to the rim by circumferentially spaced rim clamps adapted to engage the driving members. The disc has a



plurality of pockets with radially inclined parallel pairs of ramps adapted to urge the clamps radially outward into engagement with the driving members.

3,771,833

DEMOUNTABLE SOLID TIRE WHEEL ASSEMBLY

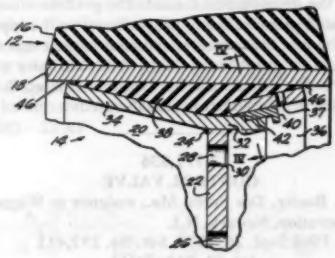
Cornelius W. Smith, 356 Fisher Rd., Crosse Pointe Farms, Mich.

Continuation of Ser. No. 878,630, Nov. 21, 1969, abandoned.

This application Oct. 12, 1971, Ser. No. 188,519

Int. Cl. B60b *9/12, 23/02*

U.S. Cl. 301—11 R **7 Claims**



A standard solid tire for an industrial vehicle releasably mounted on a wheel by applying pressure to a ring of an elastic material entrapped therebetween. The elastic ring is urged into firm frictional engagement with the wheel and tire thereby securing or locking them together.

3,771,834

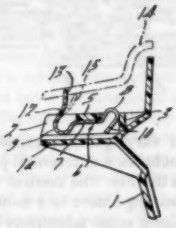
FASTENING ARRANGEMENT FOR DECORATIVE WHEEL RINGS

Paul Kretschmer, 8752 Hohenstr. 18, Waldaschaff, Germany

Filed July 3, 1972, Ser. No. 268,668

Int. Cl. B60b *7/06*

U.S. Cl. 301—37 P **6 Claims**



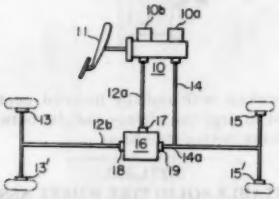
A plurality of axial clip-receiving recesses are provided on an axial flange of a decorative wheel ring. A clip for fastening the ring to a vehicle wheel is axially interlocked in each recess.

3,771,835

VEHICULAR HYDRAULIC BRAKE SYSTEM

Keiichiro Yabuta, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawaku, Yokohama, Japan

Division of Ser. No. 12,280, Feb. 18, 1970, Pat. No. 3,663,067.
This application Mar. 15, 1972, Ser. No. 234,834
Int. Cl. B60t 13/10
U.S. Cl. 303—6 C 2 Claims



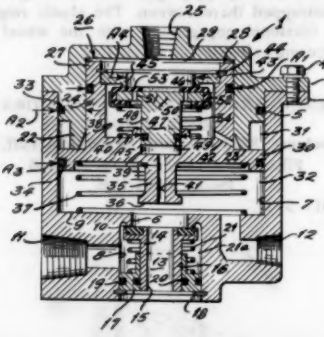
A vehicular hydraulic brake system of tandem type having front and rear sections connected, for instance, to the front and rear brake units through independent fluid circuits, which system has a fluid pressure modulator valve constructed to transmit an unmodulated fluid pressure to the brake cylinders when the deceleration is lower than a predetermined level and to transmit a modulated fluid pressure to the rear brake cylinders when the deceleration exceeds the predetermined level, the modulated pressure being proportional to the input pressure from the rear brake master cylinder. In the event a failure takes place in the front brake fluid circuit, the valve transmits to the rear brake cylinders either an unmodulated fluid pressure when the deceleration exceeds the predetermined level.

3,771,836

CONTROL VALVE

Richard C. Bueler, Des Peres, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Sept. 26, 1972, Ser. No. 292,412
Int. Cl. B60t 13/12
U.S. Cl. 303—6 C 6 Claims



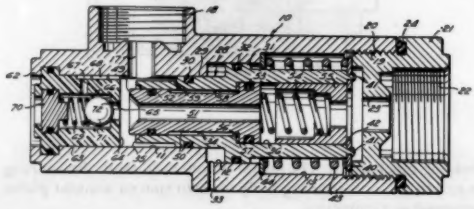
A control valve for varying brake pressures applied to a front vehicle brakes includes a differential piston having ratio changing valve means therein. The control valve comprises a differential relay means responsive to a control fluid pressure less than a predetermined value selectively subjected thereto to establish an applied fluid pressure in a predetermined ratio with the control fluid pressure, and modulating means in the differential relay means operable generally for performing modulating operations on the control fluid pressure in excess of the predetermined value, said modulating control fluid pressure acting on the differential relay means to assist the actuation thereof and increase the applied fluid pressure in another predetermined ratio with the control fluid pressure.

3,771,837

THREE SLOPE PROPORTIONING VALVE

Tadeusz Budzich, Cleveland, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

Filed Dec. 20, 1971, Ser. No. 209,762
Int. Cl. B60t 13/00
U.S. Cl. 303—6 C 14 Claims



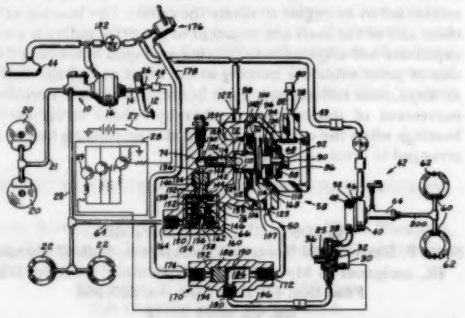
A three slope proportioning valve for a motor vehicle hydraulic brake system is normally open to permit free fluid flow from an inlet port to an outlet port below a first predetermined inlet port pressure. At the first predetermined pressure, a first valve head is displaced by operation of a differential area piston to a position to cooperate with a valve seat member. the first valve head throttles fluid flow from the inlet port to the outlet port and maintains a first predetermined proportional relation between increases in inlet and outlet port pressure when the inlet port pressure is greater than the first predetermined pressure and less than a second predetermined pressure. At the second predetermined pressure a second valve head moves toward the valve seat and the first valve head moves away from the valve seat. The second valve head cooperates with the valve seat to throttle fluid flow from the inlet port to the outlet port and maintain a second predetermined proportional relation between increases in inlet port pressure and increases in outlet port pressure above the second predetermined pressure level.

3,771,838

SYNCHRONIZED BRAKING SYSTEM FOR A TOW VEHICLE TRAILER

Louis P. Rossigno, and Michael E. Gatt, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed June 29, 1972, Ser. No. 267,294
Int. Cl. B60t 13/74
U.S. Cl. 303—7 9 Claims



A control valve for use in a tow vehicle-trailer system to synchronize the activation of the trailer brakes with the brakes

of the tow vehicle. The control valve transfers an operational signal to a servometer which pressurizes a first fluid to activate the trailer brakes in response to a second pressurized fluid which activates the brakes of the tow vehicle. A piston within the control valve has a first face joined to a smaller diameter second face by a stem with an axial opening. The second pressurized fluid acts on the first and second faces to move the axial opening against a seat when the pressure of the second pressurized fluid reaches an initial predetermined value. An increase in the pressure of the second pressurized fluid will act on the second face and move the piston away from the seat to allow the increase to modify the operational signal to the servometer.

3,771,839

DIFFERENTIAL-LOCK TYPE DEVICE FOR A MOTOR VEHICLE

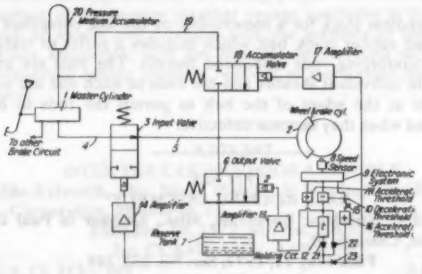
Werner Fink, Frankfurt/Main, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed July 28, 1971, Ser. No. 166,849

Claims priority, application Germany, Oct. 7, 1970, P 20 49 262.0

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 BE **6 Claims**



There are disclosed arrangements combined with known anti-skid systems that will prevent spinning of one drive wheel while the other drive wheel is stationary due to differential gearing. This is accomplished by providing a threshold circuit responsive to excess acceleration of the spinning wheel, in addition to the normal acceleration threshold circuits of an anti-skid system, to cause brake pressure to be applied to the wheel brake cylinder of the spinning wheel. The additional threshold circuit is placed in operation by the vehicle driver.

3,771,840

ANTI-SKID VEHICLE BRAKING SYSTEM

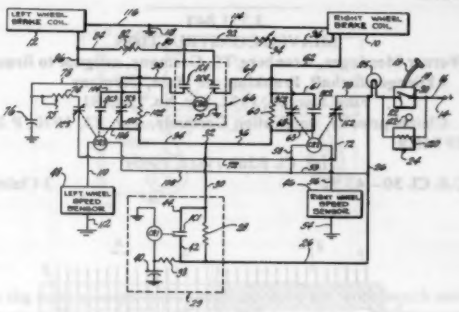
Harold C. Hubbard, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Continuation-in-part of Ser. No. 97,431, Nov. 30, 1970, abandoned. This application July 12, 1971, Ser. No. 161,885

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 EB **18 Claims**

A non-skid brake control system for vehicles, particularly towed vehicles having electrically, pneumatically and/or hydraulically operated brakes controlled from the towing vehicle. A pair of braked wheels of the towed vehicle, one on each side of the vehicle, each have a speed sensing switch to sense the rate of rotation of the associated braked trailer wheel so as to provide anti-skid modulation to the associated brake when differential braking occurs between these braked wheels. The system automatically disables the anti-skid modulation when the vehicle speed is below an adjustable predetermined speed to thereby provide full braking effort under static, hill-holding or low speed conditions. Wheel speed sensing switch constructions are employed which utilize reed switches magnetically actuated by a permanent magnet carried on a centrifugally actuated flyweight mechanism. The anti-skid system may be further modulated by a vehicle speed sensing switch to prevent dual wheel lock-up above a given vehicle speed.



3,771,841

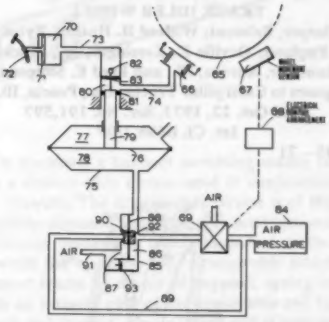
ANTI-LOCK BRAKE SYSTEMS

Derek Robert Skoyles, East Grinstead, England, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 43,157, June 3, 1970, Pat. No. 3,708,213. This application July 31, 1972, Ser. No. 276,702

Int. Cl. B60t *13/10*

U.S. Cl. 303—21 AF **5 Claims**



An anti-lock vehicle brake system having a fluid pressure source for producing brake fluid under pressure at the wheel brake so as to apply braking pressure to the wheel in response to manual braking action by the operator. Also provided is a wheel movement sensing device for producing an output function in response to a related wheel rotational movement, and an anti-lock control valve actuatable in response to said output function and effective to divert brake fluid from the wheel brake so as to relieve braking pressure and thereby avoid wheel locking. A fail-safe arrangement is connected in the system for by-passing the anti-lock system in the event of malfunction of said anti-lock control valve so as to reapply full brake pressure to the wheel brake. The fail-safe arrangement includes a differential pressure member displaceable between a normal position and an operative position in response to a difference in fluid pressure acting on opposite ends thereof. Two different reference pressures act on different surface areas of the pressure member so than when the brake pressure falls to a critical low value the pressure member will be dis-

placed from its normal position to its operative position in which a by-pass connection is established and fluid pressure is permitted to increase at the brake to restore braking pressure as a result of fluid being passed through the actuated control valve.

3,771,842

SHAVER CONSTRUCTION

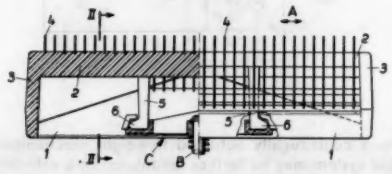
Werner Messinger, Kronberg/TS, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 16, 1971, Ser. No. 134,681

Claims priority, application Germany, Apr. 23, 1970, P 20 19 745.9

Int. Cl. B26b *19/10, 19/04*

U.S. Cl. 30—43.92 **3 Claims**



A plurality of cutter blades are mounted on a cutter blade mounting member which is elongated and reciprocable in the direction of its elongation. At least one transversely extending reinforcing wall is provided intermediate the opposite longitudinal ends of the cutter blade mounting member and extends transversely to the direction of reciprocation thereof. The reinforcing wall includes a coupling portion for engagement with an auxiliary component of the shaver which imparts reciprocatory movement to the cutter blade mounting member.

3,771,843

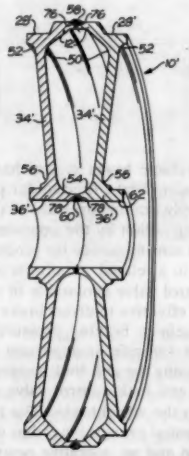
TRACK IDLER WHEEL

Thomas Clasper, Belmont; Wilfred H. Hutton, Ryton-on-Tyne, both of England; Orville E. Kessinger, Jr., Mackinaw, Ill.; Victor Randour, Aurora, Ill., and Fred E. Simpson, Oswego, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 22, 1971, Ser. No. 191,597

Int. Cl. B60b *3/08*

U.S. Cl. 305—21 **4 Claims**



A method and apparatus in the form of a heavy-duty track idler wheel comprising two formed discs that have integrally formed outer rims and inner bosses concentrically abutting each other and joined by circumscribing weld joints.

3,771,844

ENDLESS TRACK HAVING REPLACEABLE TRANSVERSE RODS

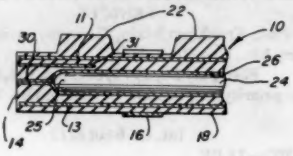
Jules Perreault, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada

Filed Feb. 17, 1972, Ser. No. 227,562

Claims priority, application Canada, Feb. 3, 1972, 133,919

Int. Cl. B62d *55/24*

U.S. Cl. 305—38 **11 Claims**



An endless track for a snowmobile or the like comprises a moulded rubber track belt which includes a series of transverse reinforcing rods embedded therein. The rods are encased in individual sheaths and the ends of each rod are accessible at the edges of the belt to permit the rods to be replaced when they become defective.

3,771,845

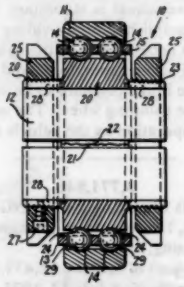
BALL BEARING ASSEMBLY

Clifford C. Stricklen, Burnsville, Miss., assignor to Paul H. Gleim, Chicago, Ill.

Filed May 11, 1972, Ser. No. 252,288

Int. Cl. F16c *33/30*

U.S. Cl. 308—236 **1 Claim**

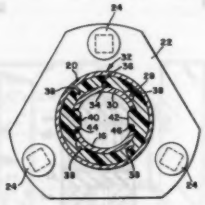


A ball bearing assembly which can be disassembled and reassembled about a shaft and into a hub without being required to be passed over the end of the shaft. The assembly includes a two-part inner race held together by two-part clamps threaded thereon and a two-part outer race adapted to be inserted into a hub. The bearing ring includes a pair of ball bearing rows arranged side-by-side and separable into two parts to permit assembly around the shaft.

3,771,846
BEARING

Merlyn Duane Bass, and Donald Herbert Pettengill, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Mar. 6, 1972, Ser. No. 232,046
Int. Cl. F16c *33/20*
U.S. Cl. 308—238 **10 Claims**

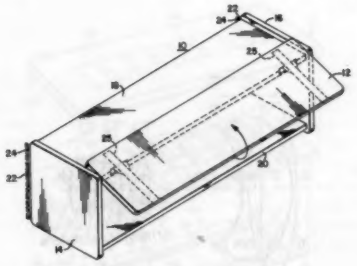


A resilient bearing member for rotatably supporting a tube concentrically within a cylindrical holder, the member having a cylindrical wall portion with an axially extending split therein and a plurality of circumferentially spaced, axially extending weakened sections operative as hinges to permit the member to be inserted radially into position on the tube. A pair of radially inwardly extending projections on the inner surface of the bearing member engage apertures in the tube wall to axially and rotatably lock the member to the tube. When assembled, with the bearing member and tube, the cylindrical holder prevents removal of the former from the latter.

3,771,847
OVER THE CABINET DOOR ASSEMBLY

Milo Aylworth, Alto, Mich., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 10, 1972, Ser. No. 216,415
Int. Cl. A47b *67/02*; A47f *3/00*
U.S. Cl. 312—245 **3 Claims**



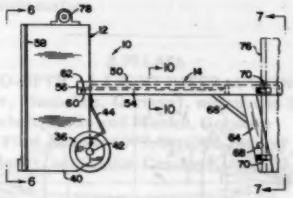
A wall mounted, backless, cabinet with an over-the-cabinet door assembly feature wherein the front door of the cabinet slides to an open and stored position overlying the cabinet top.

3,771,848
TOOL CHEST

James R. Claywell, 1406 N. Orange St., Plant City, Fla.

Filed Mar. 1, 1972, Ser. No. 230,582
Int. Cl. A47b *91/00*
U.S. Cl. 312—250 **8 Claims**

A portable tool chest comprising a cabinet having various tool storage facilities mounted thereon for the purpose of storing and transporting tools to a job site wherein the chest further comprises a work bench capable of slidingly engaging the opening to the interior of the cabinet or to the work storage means or alternately to be removed from the cabinet in closing position and attached in substantially perpendicular orientation thereto such that a carpenter or the like has access

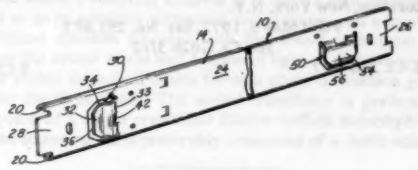


to the tools storage facility and also have the work bench substantially horizontally oriented so as to perform work thereon. Wheels and slide means attached adjacent thereto are mounted on the cabinet so as to transport the chest to any desired location including up and down stairs or the like.

3,771,849
BAYONET-MOUNTING MEANS FOR SLIDING DRAWERS

Lloyd L. Barber, Santa Ana, Calif., assignor to Standard Precision, Inc., Santa Fe Springs, Calif.

Filed Mar. 6, 1972, Ser. No. 231,965
Int. Cl. F16c *29/00*
U.S. Cl. 312—350 **8 Claims**



There is disclosed a bayonet mounting means in combination with a drawer-slide device used in conjunction with file and desk drawers. The drawer-slide device is of the type having oppositely-disposed rails operably interconnected by ball rollers wherein one rail is fixedly attached to the side of a drawer, while the opposite rail is removably attached to the inner cabinet frame by means of bayonet, spring-loaded clips formed as an integral part of the removable rail by stamping out, at each end thereof, a main finger and at least one limiting rib member. One bayonet clip is positioned in a horizontal plane while the oppositely-disposed clip is positioned vertical to the center line of the rail, and each clip is adapted to be removably received in slots formed in the frame of the file cabinet or desk, thereby providing a simple and easy method of installing desk and file drawers in their related structures.

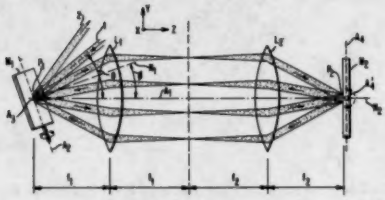
3,771,850
SCAN ANGLE MULTIPLIER OF CONSTANT APERTURE

David H. Casler, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 854,470, Sept. 2, 1969, abandoned. This application Aug. 4, 1971, Ser. No. 169,098
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 **19 Claims**

A method and apparatus are described for increasing the scan angle of a light deflector without a corresponding decrease in effective aperture. By imaging a deflector back

upon itself, the resultant multiple reflections produce an enhancement of the scan angle. The scan angle multiplier is particularly applicable to refective deflectors where the resolution is limited by the deflection angle. The device comprises two mirrors and two lenses separated by the sum of their



focal lengths. One or both of the mirrors pivot about the focal points of their associated lenses. The input mirror is positioned so that its normal is at an angle from the axis of the lenses, while the normal of the second mirror is parallel to the axis.

3,771,851

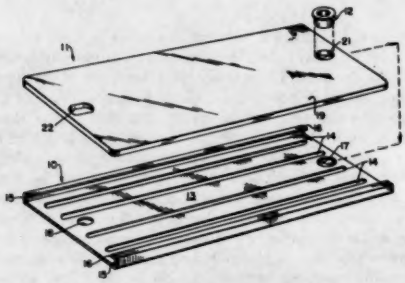
DISPLAY ASSEMBLY

Sidney A. Heenan, Park Ridge, and Norbert Majewski, Elk Grove Village, both of Ill., assignors to Amerace Esna Corporation, New York, N.Y.

Filed May 9, 1972, Ser. No. 251,673

Int. Cl. G02b *5/12*

U.S. Cl. 350—97 **9 Claims**



A directable display assembly adapted to be mounted to a support in an outdoor environment is disclosed. The assembly includes a reflector display element held within and secured to a channel-shaped metal backing member by means of an eyelet fastener. The eyelet fastener serves the three-fold function of maintaining the reflector in position within the backing member, providing a mounting aperture for a first mounting fastener, and absorbing the loading forces from the fastener to prevent the relatively frangible reflector from cracking. A second mounting fastener bears solely on the backing member, leaving the reflector free to float and minimizing the possibility of the reflector cracking during extreme temperature variations.

3,771,852

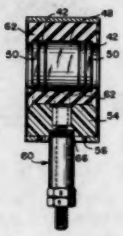
POCKELS CELL

Joseph W. Kantorski; David A. La Barre, both of Southbridge, and Donald A. Smith, Woodstock, all of Conn., assignors to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 833,330, June 16, 1969. This application Jan. 29, 1971, Ser. No. 111,110

Int. Cl. H01s *3/11*; **G02f** *1/26*

U.S. Cl. 350—150 **6 Claims**



A Pockels cell unit is of an extremely small and durable design. The size reduction is achieved by mounting the electro-optic crystal in a potting compound which prevents the collection of moisture along the surfaces of the crystal and isolates the electrical terminals in a manner such that they may be located much closer together than was heretofore possible.

3,771,853

FOUR COMPONENT ZOOM LENS

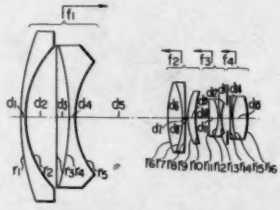
Soichi Nakamura, Kamakura, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 9, 1971, Ser. No. 206,359

Claims priority, application Japan, Dec. 15, 1970, 45/111283

Int. Cl. G02b *15/16*

U.S. Cl. 350—184 **9 Claims**



A zoom lens of the type in which a first lens group is divergent and all lens groups are movable and which is suitable for use with still cameras. The zoom lens comprises a first lens group of divergence, a second lens group of convergence, a third lens group of divergence and a fourth lens group of convergence, these lens groups being arranged in the named order in the direction from an object. The second to fourth lens groups are displaceable along a common optical axis in the same direction while they are maintained in predetermined conditions. At the same time, the first lens group is displaceable in the opposite direction so as to contribute to the magnification variance and maintain a predetermined focal point.

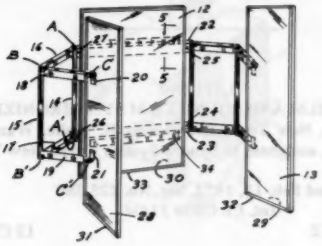
3,771,854
MULTIPLE TORQUE TUBE SYSTEM FOR VARIABLE VIEW MIRRORS

Glenn L. Roark, 17164 Santa Clara, Fountain Valley, Calif.

Field Sept. 11, 1968, Ser. No. 758,982. The portion of the term of this patent subsequent to Nov. 13, 1988, has been disclaimed.

Int. Cl. G02b 5/08

U.S. Cl. 350—304 1 Claim



A foldable mirror system employing a unique combination of structural mechanisms for allowing mirrors to be adjusted with respect to each other in a degree of unrestricted movement about vertical axes. The mirrors are maintained in rigid structural relationship with each other while the mechanism is adapted to fold into a compact space behind the mirrors when in the stored position.

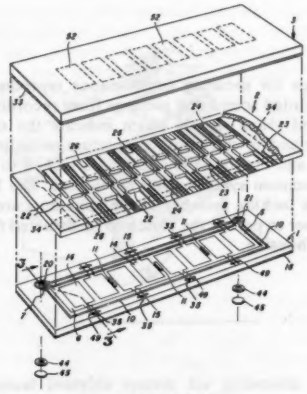
3,771,855
LIQUID CRYSTAL DISPLAY PANEL

Carmen D. Burns, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 1, 1972, Ser. No. 249,000

Int. Cl. G02f 1/16

U.S. Cl. 350—160 LC 3 Claims



Disclosed is a liquid crystal display panel constructed from two plates of glass one of which is preferably only about 10 mils thick when the display panel is of the reflective type; the compartment containing the liquid crystal material is formed by etching a depression in one of the plates; the two plates are sealed together using a low viscosity, low outgassing epoxy material applied in such a way as to minimize the epoxy surface exposed to the liquid crystal material. Other features include a filling aperture seal means providing for thermal expansion to the liquid and minimum contamination, provision of a reflective surface on the exterior of the panels to provide the function of reflective electrodes while eliminating the necessity of contaminating reflective materials within the liquid compartment, masking of unsightly leads from the face of the panel and access to all electrical connections into the panel on a single surface.

3,771,856
ACOUSTO-OPTICAL LIGHT DIFFRACTION DEVICE

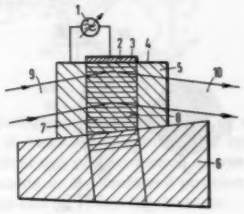
Hans Eschler, Muenchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 14, 1972, Ser. No. 271,697

Claims priority, application Germany, Aug. 12, 1971, P 21 40 548.1

Int. Cl. G02f 1/28

U.S. Cl. 350—161 4 Claims



An acousto-optical light deflector comprised of a piezoelectric sound transducer adapted to receive a high frequency signal so as to generate ultrasonic sound waves and a crystalline sound medium coupled with the sound transducer to receive the sound waves and a beam of light so that the sound waves within the sound media forms a phase diffraction grating for the light beam. The sound transducer is preferably composed of a single crystalline lithium sulfate monohydrate and the sound media is preferably composed of α-iodic acid.

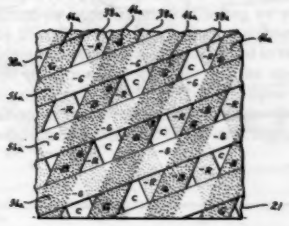
3,771,857
STRIPED DICHROIC FILTER AND METHOD FOR MAKING THE SAME

David G. Thomasson; Frederick K. Crosher; Michael D. Temple; Leroy A. Bartolmei, and Richard Ian Seddon, all of Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Apr. 19, 1971, Ser. No. 135,131

Int. Cl. G02b 5/28

U.S. Cl. 350—166 10 Claims



Striped dichroic filter having a substantially transparent glass substrate with a surface and having first and second sets of spaced parallel stripes disposed on said surface at an angle with respect to each other and with each of said sets of stripes being capable of reflecting at least one different color and

with the stripes being formed of a plurality of layers of high and low index dielectric materials.

In the method for making a striped dichroic filter, first and second sets of spaced parallel stripes are sequentially formed by sequentially depositing dielectric coating materials on sequentially formed stripe material which is subsequently etched away to remove the undesired portions of the coating material so that there remains first and second sets of spaced parallel stripes at angles with respect to each other and with each being capable of reflecting at least one different color.

3,771,858

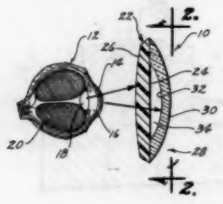
OPHTHALMIC LENS

Carl F. Bivens, 801 E. 26th St., Des Moines, Iowa

Continuation-in-part of Ser. No. 15,533, March 2, 1970, abandoned. This application Jan. 31, 1972, Ser. No. 222,347

Int. Cl. G02c *7/02, 7/06*

U.S. Cl. 351—159 **5 Claims**



This invention relates to an improved visual aid in the form of an ophthalmic lens comprising a comating pair of aligned lens parts, the part furthest from the eye being of a concave meniscus type lens, made of optical glass such as crown; and the part closest to the eye being of a plano-convex type lens, with the convex surface toward the eye, and made of optical plastic such as allyl diglycol carbonate.

3,771,859

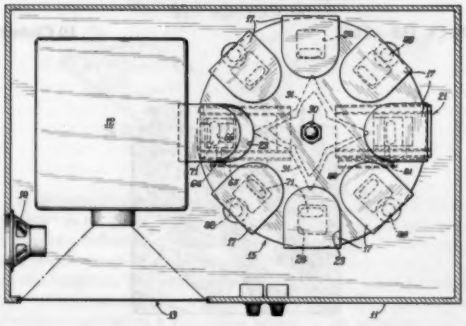
UNITARY PROJECTOR PLAYER

Ray C. Anderson, 6655 S. New Haven, Tulsa, Okla.

Filed Sept. 27, 1971, Ser. No. 183,957

Int. Cl. G03b *23/02*

U.S. Cl. 352—8 **9 Claims**



A self-contained unitary audio-visual entertainment center having a housing containing a sound film projector, a translucent screen in one wall of the housing on which the films are rear-projected, and a film cartridge selector mechanism for injecting and ejecting a plurality of film cartridges sequentially or selectively into the projector. The cartridge selector mechanism includes an index drum adapted to rotate in a horizontal plane and formed with a plurality of circumferentially spaced pockets for retaining the film cartridges, and also having a cam mechanism which includes a star-shaped groove and a horizontally reciprocating indexing pin engaging the groove and effective for each horizontal stroke to index another film cartridge to a proper station for insertion into the projector-player.

3,771,860

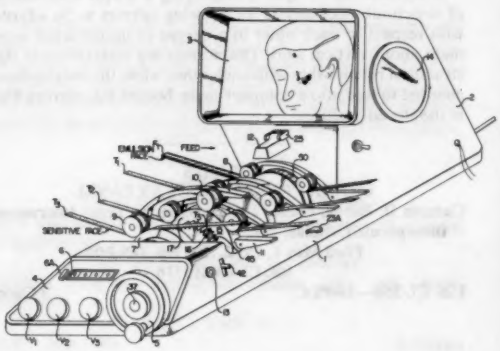
PICTURE FILM AND SOUND FILM SYNCHRONIZER

Bernard Stone, New York, and Dennis H. Knife, Wantagh, both of N.Y., assignors to Syncro-System Corp., New York, N.Y.

Filed Feb. 11, 1972, Ser. No. 225,380

Int. Cl. G03b *31/04*

U.S. Cl. 352—12 **12 Claims**



An apparatus for securing simultaneous reproduction of separately recorded sound and pictures from recordings having audible and visual signals which indicate the start and finish of a take and in which both the picture recording at the starting signal and the sound recording are locked to join the elements in common synchronized movement. The housing, clutch, and the locking member of the apparatus are assembled in a manner to permit the clutch to be actuated from the exterior of the housing.

3,771,861

MANUALLY CONTROLLED REPLAY SYSTEM FOR AUTOMATIC TRANSPARENCY PROCESSING AND PROJECTION APPARATUS

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

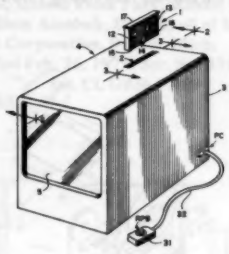
Filed June 9, 1972, Ser. No. 261,301

Int. Cl. G03c *11/00*

U.S. Cl. 352—130 **20 Claims**

A manually controlled replay system for automatic photographic transparency processing and projection apparatus of

the kind adapted to receive cassettes of film each containing a film processor. Such apparatus manipulates the film in the cassette to process it, unless it has already been processed, projects processed film, rewinds the film after projection, and



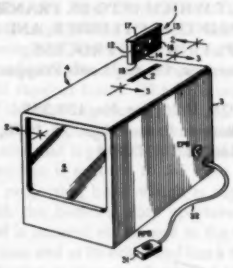
then ejects the cassette. The replay system comprises a manually operable control, effective during the projection of film, to partially or completely rewind the film and reproject selected portions of it.

3,771,862

SUPERVISORY CONTROL SYSTEM FOR AUTOMATIC TRANSPARENCY PROCESSING AND PROJECTION APPARATUS

Edwin H. Land, Cambridge, and Stewart Bennett, Concord, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed June 9, 1972, Ser. No. 261,196
Int. Cl. G03c *11/00*
U.S. Cl. 352—130 **9 Claims**



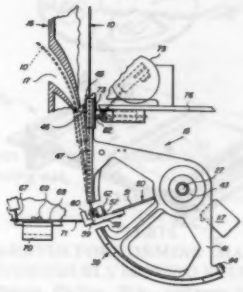
A manual override system for automatic photographic transparency processing and projection apparatus adapted to receive cassettes of film, each containing a film processor. The apparatus manipulates the film in the cassette to process it, unless it has already been processed, and projects processed film. A cassette is normally latched into the apparatus until the film has been projected and rewound. The override system comprises an emergency eject control for causing the apparatus to eject the cassette at any point in the operating cycle, and a replay control effective during the projection of film for partially rewinding the film and reprojecting selected portions of it.

3,771,863

MICROFICHE IMAGE SELECTION DEVICE

Edward Muka, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 7, 1971, Ser. No. 150,697
Int. Cl. G03b *23/08*
U.S. Cl. 353—27 **9 Claims**



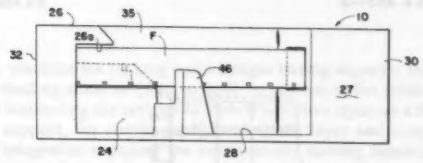
A device for positioning a selected one of a plurality of images arranged in rows and columns on a record medium relative to the optical axis of a projection system and in which such device is located in a preselected position for receiving the record medium and for removing the same.

3,771,864

FILM CARTRIDGE WITH GUIDE FINGER

Stephen H. Miller, and Archie J. Tucker, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 24, 1972, Ser. No. 256,242
Int. Cl. G03b *23/02*
U.S. Cl. 352—78 R **1 Claim**



A cartridge to be loaded with a length of film or other strip material is adapted to be positioned in a sound motion picture camera, projector or other sound recording or reproducing apparatus. The cartridge has an open area across which the strip material extends so that the strip material in this area can cooperate with the sound mechanism of the apparatus. A guide finger is positioned with respect to the open area in the cartridge to contain the strip material within the cartridge body, thereby facilitating insertion of the cartridge into the apparatus.

ERRATUM

For Class 353—27 see:
Patent No. 3,771,863

3,771,865

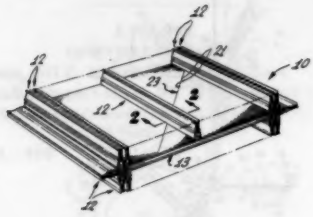
ENDLESS FLEXIBLE SLIDE HOLDER AND METHOD OF MAKING SAME

Gerald J. Frey, 1486 Cantera Ave., Santa Barbara, Calif.

Continuation-in-part of Ser. No. 865,613, Oct. 13, 1969, Pat. No. 3,632,200. This application Dec. 10, 1971, Ser. No. 206,761

Int. Cl. G03b 23/12

U.S. Cl. 353—109 7 Claims



A slide holder comprising a fabric belt with parallel bias-cut end edges fitted together to shape the belt into annular form, and a series of spring clips arranged around the belt and adhesively secured thereto with several of the clips straddling the bias-cut end edges to hold the belt in annular form. Also, the method of making the slide holder by bias-cutting a strip of fabric pre-coated with thermo-setting adhesive, shaping the strip to annular form, arranging the clips around it, and thermally curing the adhesive.

3,771,866

TRANSFER TYPE ELECTROPHOTOGRAPHIC DUPLICATING APPARATUS

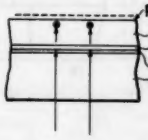
Masaya Ogawa, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

Filed Dec. 28, 1971, Ser. No. 212,916

Claims priority, application Japan, Dec. 30, 1970, 45/126790

Int. Cl. G03g 15/00

U.S. Cl. 355—3 5 Claims



In a transfer electrophotographic duplicator an exposure means includes an optical system having a slit movable in parallel with a transparent plate for supporting an original document so as to project an image onto a flexible sensitive film. At least a portion of the film is supported in a plane parallel to the transparent plate by a supply roller and a take-up roller. A driving roller transports the flexible film between the supply roller and the take-up roller and is controlled by a first switch which stops the driving roller when the film has been transported a distance a length longer than that of the original image. A driving member is then actuated to move the exposure means across the transparent plate and a second switch stops the driving member after it has moved across the transparent plate. A third switch actuates the driving roller to transport the film from the take-up roller to the supply roller. Control means are provided for actuating a corona discharge device, a transfer feeding device, a transfer device, and a developing device.

3,771,867

EXPOSURE APPARATUS FOR ELECTROPHOTOGRAPHIC REPRODUCTION MACHINES

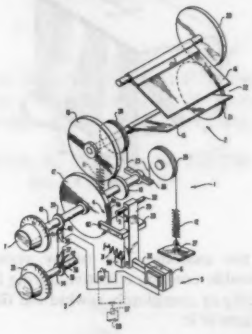
Hermann Moser, 38, Wilhelm-Glassing-Strasse, Darmstadt, Germany

Filed Oct. 2, 1972, Ser. No. 293,838

Claims priority, application Germany, Oct. 4, 1971, P 21 49 404.2

Int. Cl. G03b 27/54; G03g 15/00

U.S. Cl. 355—14 11 Claims



The machine includes a setting device for adjusting the exposure from a normal exposure, a programming mechanism for single or multiple copying operations and including a device for signalling the end of a single or multiple copying operation, and a resetting device for automatically returning the setting device to a setting for normal exposure in response to the signal from the programming mechanism. Additionally and in another embodiment, the machine includes a timing device which retards actuation of the resetting device for a period that is slightly longer than the time required to change from one original to another.

3,771,868

METHOD FOR PREPARING AND CHECKING A PHOTOGRAPHIC CUT WHICH IS TO BE TRANSFERRED TO A SENSITIZED PRINTING CYLINDER, AND MEANS FOR APPLYING THIS PROCESS

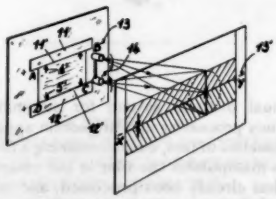
Roger Jules Justin Bassereau, 16, rue Louis Frappart, Aulnay sous Bois, France

Filed Apr. 28, 1971, Ser. No. 138,238

Claims priority, application France, Apr. 30, 1970, 7015942

Int. Cl. G03f 9/00

U.S. Cl. 355—77 8 Claims



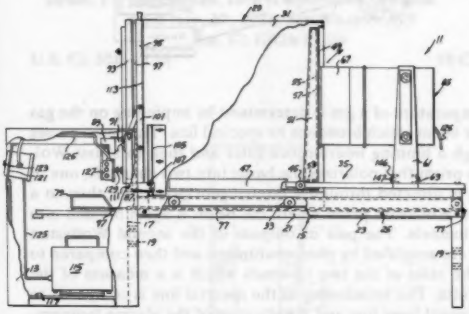
A process for the preparation and checking of a photographic cut which is to be transferred to a printing cylinder consisting in simultaneously projecting on a screen with the aid of a pair of projectors disposed in a plane perpendicular to said cut, a point on the upper edge and a corresponding point

on the lower edge of said cut, merging the images of these two points and moving the pair of projectors parallel to the cut in such a way as to project, successively, all points on the upper and lower edges of the cut and an apparatus for carrying out this process.

3,771,869
PRINTING PLATE MAKER

Robert J. Diehl, Grosse Point Park; Robert Maher, Farmington, and William Amolsch, Detroit, all of Mich., assignors to The Douthitt Corporation, Detroit, Mich.

Filed Feb. 26, 1973, Ser. No. 335,492
Int. Cl. G03b 27/04
U.S. Cl. 355—85 **10 Claims**



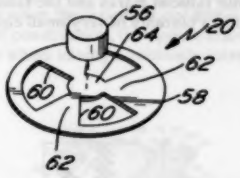
In a printing plate maker which has a body, a blanket frame pivoted thereon and a glass frame pivoted to the blanket frame, with both frames tiltable to an upright position, there is provided a rearwardly extending framework mounting channel tracks. An inverted U-shaped housing overlies said framework and has rollers supported in the tracks for longitudinal adjustments of the housing relative to the body. A high intensity light support frame overlies the framework and at its rear end has rollers guidably mounted in the channel tracks, with the forward ends thereof mounting additional rollers guidably mounted within opposed channels upon the interior of the housing wall for adjustment relative to the housing. The housing is adapted for adjustment independent of and relative to the light support frame. The light support frame upon the interior of the housing mounts an upright bellows plate which is apertured. A light frame extends transversely of the light support frame and is pivotally mounted thereon. A high intensity light source is secured to the light frame and includes a forwardly projecting hood which is supported upon and registers with the bellows plate aperture. A separate manual control rod is secured at one end to the under side of the light support frame and at its other end has a handle with associated pointer adapted to move with respect to a stationary longitudinally extending scale. Said rod by remote control manually regulates the center distance between the high intensity light on the light support frame with respect to the glass frame.

3,771,870
REGISTER PIN FOR VACUUM FRAME

Philip Taylor, 2237 Bryn Mawr Ave., Apt. 216, Philadelphia, Pa.

Filed Jan. 10, 1973, Ser. No. 322,569
Int. Cl. G03b 27/20
U.S. Cl. 355—91 **8 Claims**

A register pin for use in a vacuum frame. The register pin comprises a vertically extending pin and a horizontally extending support therefor. The support comprises a plurality of radially extending spaced flat fingers which are secured to the

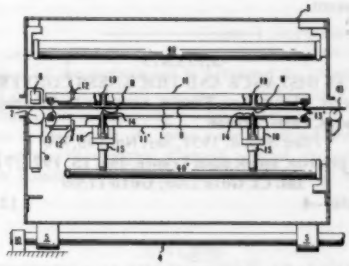


pin. The fingers are adapted to maintain the pin in its vertical orientation during use.

3,771,871
APPARATUS FOR FORMING IMAGES ON CONTINUOUSLY MOVING ELEMENTS

James A. Rattman, Philips, Wis., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 4, 1971, Ser. No. 186,321
Int. Cl. G03b 27/08
U.S. Cl. 355—102 **9 Claims**



A machine for making resist images having separate means for feeding sheet or plate articles in sequence, for receiving and laminating the articles to a photosensitive layer on a flexible support, for continuously feeding the layer and support, for imagewise exposing the continuously moving laminae to actinic radiation, for delaminating the support from the remaining laminae, and optionally, means for applying heat to the laminae during delamination.

3,771,872
MASK AND APPARATUS USED FOR ALIGNMENT PURPOSES IN PHOTOLITHOGRAPHY

Eric Gordon Nightingale, London, and Roger Cullis, Cranleigh, both of England, assignors to The Rank Organization Limited, London, England

Filed Dec. 8, 1972, Ser. No. 313,508
Claims priority, application Great Britain, Dec. 8, 1971, 56,937/71
Int. Cl. G03b 27/28
U.S. Cl. 355—125 **18 Claims**

A mask for use in photolithography and apparatus for using the mask, in which a pattern formed as opaque regions in a transparent mask or as transparent regions in an opaque mask are to be transferred to a photosensitive layer by exposing the photosensitive layer through the mask. Alternatively the

photosensitive layer could be exposed to light reflected from the mask if the pattern were formed as variations in the reflectivity of the mask. In order that the mask can be accurately positioned with respect to the photosensitive layer they are both formed with fiducial marks and the fiducial mark on the mask is formed as a plurality of very small elements extending

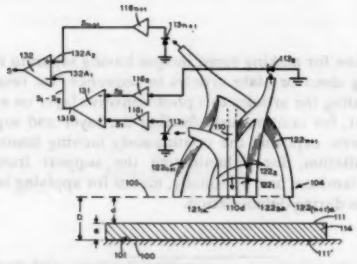
transverse the general line of the fiducial mark and so positioned that diffraction effects at the edges of the elements cooperate to provide a single dense image, that is a single bright image on a dark ground or a single dark image on a bright ground depending on whether the elements are opaque or transparent.

3,771,873

OPTICAL DISTANCE AND THICKNESS CONVERTER

Jean Tourret, Montrouge, France, assignor to Compagnie des Compteurs, Paris, France

Filed Nov. 4, 1971, Ser. No. 195,770
Claims priority, application France, Jan. 15, 1971, 7101304
Int. Cl. G01c *3/08;* **G01b** *11/00*
U.S. Cl. 356—4 **12 Claims**



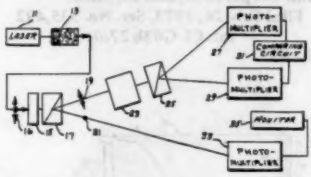
In accordance with an illustrative embodiment of the invention, an apparatus is provided which comprises a fiber optic bundle for transmitting light to an emitting end thereof to illuminate a front and rear surfaces of a transparent body opposite this emitting end. At least two fiber optic receiver bundles each having at least one receiving end for picking up light reflected by a respective one of said surfaces are provided for transmitting a luminous flux to produce a respective signal linearly related to the relative distance between the respective surface and the emitting end. The difference of the signals gives an indication of the spacing between the two surfaces, i. e., the thickness of the body. A third fiber optic bundle is provided to obtain a third signal related to the distance of the rear surface according to a desired relationship. The third signal is used to provide a compensated indication of the thickness.

3,771,874

PYROMETER USING A PASSIVE LINE SHAPE SPECTRAL FILTER

Harry Sadjian, Southampton, Pa., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 14, 1972, Ser. No. 271,946
Int. Cl. G01j *5/48*
U.S. Cl. 356—43 **2 Claims**



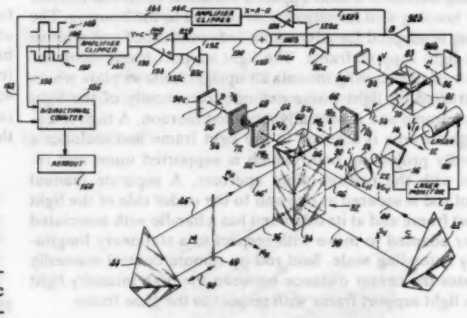
Temperature of a gas is determined by impinging on the gas a laser beam which broadens its spectral line. The beam passes through a limiting interference filter and then to a first Wollaston prism that polarizes the beam into two channels, one of which is directed through a birefringent prism and then to a second Wollaston prism where the beam is again divided into two channels. The pair of outputs of the second Wollaston prism are amplified by photomultipliers and then compared to find the ratio of the two channels which is a measure of the line width. The broadening of the spectral line is compared to the original laser line and is indicative of the plasma temperature.

3,771,875

INTERFEROMETER HAVING D.C. LEVEL COMPENSATION

John J. Russo, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Nov. 15, 1971, Ser. No. 198,581
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 **4 Claims**



An interferometer for precisely measuring the displacement of an object of the type including means: for reflecting from the object position a "measuring" beam of a first polarization condition, for combining therewith a "standard" beam of a second polarization condition, and for producing signals representative of interference produced between both beams, which signals vary according to the distance travelled by the measuring beam. The improvement involves causing the final signals developed to be free of any d.c. component, caused both (a) by background (unpolarized and/or depolarized) radiation, and (b) by the average (d.c.) level of the significant

polarized radiation which generates the object distance a.c. signals. The specific embodiment provides three original object distance varying signals (A, B, C) with the second in phase opposition and the third in quadrature to the first. The algebraic difference (X) of the first two (A–B) and the difference (Y) of the third less the average of the first two ($C-A+B/2$) will both be free of any d.c. component caused by either background or average signal amplitude. These (X and Y) derived final a.c. signals provide precise actual measurement (interference "fringe" count) since they are exactly symmetrical to the zero level.

3,771,876

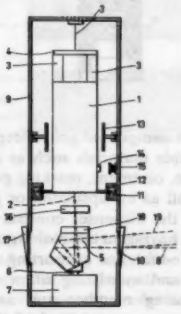
PRODUCING A PLANE OR CONICAL OPTICAL REFERENCE SURFACE

Erland Samuel Ljungdahl, 9, Fafnerstigen, and Lars Axel Ekstrom, 11, Stallbacken, both of Djursholm, Sweden

Filed Nov. 17, 1971, Ser. No. 199,699

Int. Cl. G01b *11/26*

U.S. Cl. 356—138 **10 Claims**



Apparatus for producing a plane or conical optical reference surface by deflection of a primary light beam provided by a light source, with a beam being deflected by a rotatable light deflecting means. The light source is suspended as a pendulum and directs the light beam in a vertical direction towards the light deflecting means. The deflected light beam exists through a conical cylindrical prism if redeflection to produce a conical reference surface is desired. The light source is suspended by a flexible means comprising at least two members which are respectively flexible in directions perpendicular to each other, thereby permitting the pendulating of the light source means in any direction and providing also for the energization of the light source through the flexible means which may be electrically conductive. A method of initially aligning the primary light beam with the vertical axis is also shown, where a free liquid surface such as mercury is used to retroreflect the beam.

3,771,877

DENSITOMETER INCORPORATING OPTICAL ATTENUATOR WITH DIRECT READOUT OF OPTICAL DENSITY

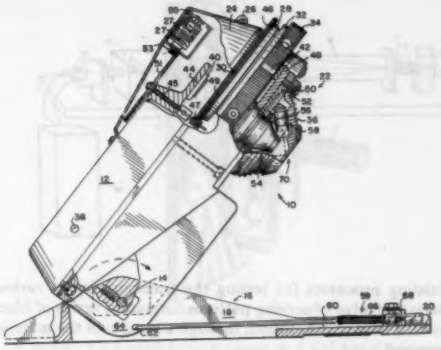
Robert Rosencranz, Highland Park, Ill., assignor to Sargent-Welch Scientific Company, Cook County, Ill.

Filed Feb. 14, 1972, Ser. No. 225,837

Int. Cl. G01j *3/48*; G01n *21/48*; G01j *1/42*

U.S. Cl. 356—186 **14 Claims**

An instrument for determining optical density by measurement of diffuse reflected light. The instrument includes a light source, means for forming a beam of diffuse reflected light, an electrical balancing circuit, and an optical attenuator for controlling the intensity of light incident on a photoresponsive element forming a part of the balancing circuit. In the use of the instrument, the units of optical density are read directly from the optical attenuator, and mechanical movement thereof serves to provide an aperture of increased or decreased size, admitting more or less light, until electrical balance is achieved in the circuit. A balanced circuit condition is indicated by extinguishment of a single bulb, and the reading is taken only when the balanced condition occurs. In the preferred form of construction, the optical attenuator is in the form of a disc or wheel having a gradually increasing opening



therein, and adapted for direct manipulation by the operator. Calibration of the instrument is achieved by illuminating a standard or known control specimen, and adjusting a nulling potentiometer in a balancing bridge to produce a balanced condition in the circuit. By using a mechanical attenuator instead of an electrical signal strength control, the unit is simplified in construction and is more accurate and reliable in use.

3,771,878

CENTRIFUGAL PHOTOMETRIC ANALYZER

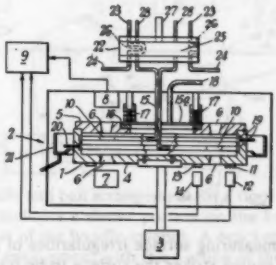
James Oscar Molloy, Surrey; Peter Dunnill, London, and Malcom Douglas Lilly, Kent, all of England, assignor to M.S.E. Holdings Limited, Sussex, England

Filed Mar. 24, 1971, Ser. No. 127,731

Claims priority, application Great Britain, Mar. 25, 1970, 14607/70

Int. Cl. G01n *21/24*

U.S. Cl. 356—197 **16 Claims**

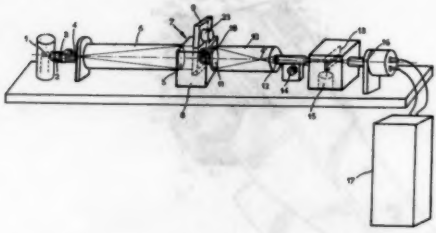


A centrifugal photometric analyser comprises a rotor having a plurality of cuvettes at least some of which have inlets opening at different axial levels of a central feed region of the rotor, and feed means opening with a radially outwards component at said axial levels so that the cuvettes can be supplied with different material at the different axial levels.

3,771,879
PROCESS AND APPARATUS FOR MEASURING TRANSPARENCY

Claude Chambu, Billere, and Jean-Paul Collo, Denguin, both of France, assignors to Societe Anonyme dite: Societe National Des Petroles D'Aquitaine, Paris, France

Filed Nov. 16, 1971, Ser. No. 199,198
Claims priority, application France, Nov. 16, 1970, 7041020
Int. Cl. G01n 21/06
U.S. Cl. 356—201 16 Claims



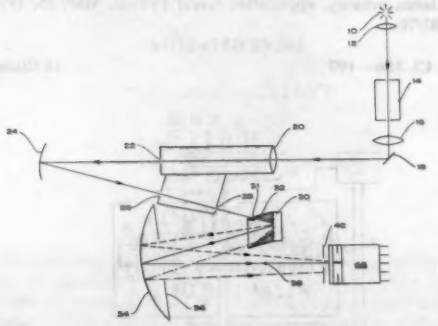
Existing processes for testing the transparency of various materials involve observing patterns formed of series of black lines on a white background, through a sample of the material concerned.

The present invention consists of lighting tee sample with a parallel light beam from collimator, receiving the beam transmitted by the sample on an optical system which is coaxial wth the collimator and forming an image of the slit in the collimator on a sinusoidal pattern which is moving in relation to the collimator, measuring the luminous flux transmitted by the pattern, and working out the factor of contrast, from the maximum and minimum flux transmitted.

3,771,880
ROUGHNESS ANALYZER

Harold E. Bennett, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed Sept. 29, 1971, Ser. No. 184,752
Int. Cl. G01n 21/48
U.S. Cl. 356—209 2 Claims



A device for measuring surface irregularities of an optical surface. A light source strikes the surface to be tested and is both specularly reflected and scattered outside the specular direction. A reflecting cone directs some of that light outside the specular direction to a measuring device. Some of the scattered light falls on the device without striking the cone, as does the specularly reflected light. Thus the fraction of the reflected light which is within a given angle of the specular direction may be measured. Alternatively a light source passes through a hole in the back of a Coblentz sphere. Light within the specular direction returns through the hole and is measured with a light measuring device while light scattered without the specular direction is measured by a second light measuring device.

3,771,881
TWO-PIECE PROPEL-REPEL DISPENSER

Roy S. Swenson, Danbury, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.

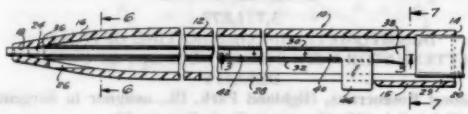
Filed Apr. 10, 1972, Ser. No. 242,493
Int. Cl. A45d 40/06
U.S. Cl. 401—75 8 Claims

An essentially two-component propel-repel dispenser is disclosed for consumable materials such as a lipstick or other cosmetic, toothpaste, ointment, marking pigment and similar paste masses, as well as encapsulated or pelleted materials. One component of the dispenser consists of an open-ended outer tubular casing having an internal thread. The other comprises a consumable-material supporting structure integrall molded of plastic and consisting of: a carrier threadedly received in the casing member and axially reciprocable toward and away from an open end of the casing member upon rotation relative to the casing; a base element forming a closure for the other end of the casing, confined therein for rotation but against axial movement; and a pleated torque-transmitting element integrally molded with, and interconnected at its opposite ends to, the base and carrier elements, the torque-transmitting element serving to impart rotational force from the base member to the carrier and being axially extensible and contractible by means of the pleating.

3,771,882
DISPOSABLE MECHANICAL PENCIL ASSEMBLY

Marvin Kapilow, 8 Sound Rd., Rye, N.Y.

Filed May 26, 1972, Ser. No. 257,357
Int. Cl. B43k 21/06
U.S. Cl. 401—80 11 Claims



A disposable mechanical pencil includes a tubular barrel having a forward tapered end through which the lead is adapted to project. A tube which receives this lead is disposed interiorly of the barrel in concentric relation therewith. Outwardly flared arms on this tube cooperate in centering the tube within the barrel. A carrier acts to shift the lead forwardly out of the barrel and includes a laterally projecting finger graspable handle for such purpose. The handle is

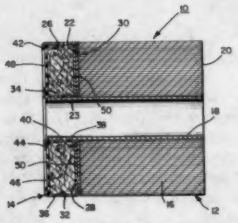
adapted to move through aligned slots in both the barrel and the tube and also serves as an indicator for the amount of lead remaining within the tube. The barrel includes a radially inwardly projecting lip at the tapered forward end for engaging the lead and preventing it from falling out of the tube. The carrier is provided with resistance means in the form of alternate bends which engage the interior surfaces of the tube thereby preventing the lead from being pushed back into the tube under normal writing pressure.

3,771,883

DUAL-USE SANITARY PRODUCT SYSTEMS

Raymond H. Terepin, Wilmington, Del., assignor to Scott Paper Company, Delaware County, Pa.

Filed Mar. 16, 1972, Ser. No. 235,258
Int. Cl. A46b *11/00*
U.S. Cl. 401—123 **20 Claims**



Dual-use sanitary product systems for permitting an absorbent fibrous web of a sanitary web roll to be utilized in either a dry or lubricated condition. The systems include a receptacle and a sanitary web roll, such as a toilet tissue roll, a disposable towel roll and the like. The receptacle includes an annular compartment in which a lubricant-containing flexible, absorbent substrate is disposed. The annular compartment is defined by inner surfaces of a fluid-impervious back wall and fluid-impervious spaced, outer and inner cylindrical side walls extending forwardly of the back wall and terminating in end margins defining an opening into the compartment. The receptacle further includes a mounting section including a surface in frictional engagement with a surface of the sanitary web roll; and the back wall of the compartment is disposed in overlying, contiguous relationship with one end surface of the absorbent fibrous web of the sanitary web roll.

Lubricant dispensing assemblies include a lubricant-containing, flexible, absorbent, annular substrate having opposed, front and back surfaces joined at inner and outer marginal edges thereof by inner and outer side surfaces. A flexible overwrap material is disposed about the substrate, and has lubricant impervious back and side walls disposed contiguous to the back and side surfaces of the substrate. The flexible overwrap material can include a lubricant-pervious front wall disposed contiguous to the front surface of the substrate, in which case a removable, lubricant-impervious sealing strip is adhered over the front wall of the overwrap material. Optionally, the front wall of the overwrap material can include only a lubricant-impervious, removable sealing strip. The lubricant dispensing assembly is adapted to be retained within the annular compartment of the receptacles of the dual-use sanitary product systems of this invention.

ERRATUM

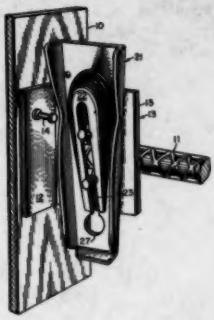
For Class 402—21 see:
Patent No. 3,771,890

3,771,884

WEDGE-HELD U-BOLT CLAMP

Chester I. Williams, 347 Greenbrier, S.E., Grand Rapids, Mich.

Continuation of Ser. No. 816,645, April 16, 1969, abandoned.
This application Aug. 23, 1971, Ser. No. 174,241
Int. Cl. F16b *7/04*
U.S. Cl. 403—188 **3 Claims**



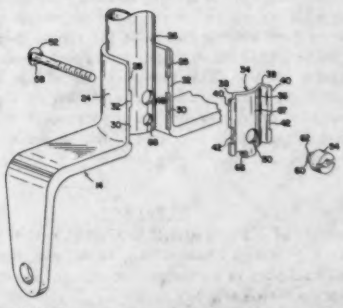
A device for transferring stresses to a rod having transverse ridges. In the preferred form, the device includes a U-bolt embracing the rod and traversing a member bearing against the rod, and also includes a locking device engageable with the legs of the U-bolt on the opposite side of the bearing member from the reinforcing rod. The U-bolt is receivable against at least one of the ridges to provide restraint against axial slippage.

3,771,885

NON-SLIP HANDLE TO BAIL RETAINING MEANS

Ralph L. Brown, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio

Filed Oct. 6, 1972, Ser. No. 295,672
Int. Cl. F16b *1/00*
U.S. Cl. 287—119 R **3 Claims**



A handle and bail arrangement for a floor care appliance or the like includes a sleeve portion on the bail into which the lower part of the handle extends. A bracket plate is nested in abutting engagement with this portion of the handle, with the sleeve and bracket plate having interengaging tabs and slots. Coincident apertures are formed in the bracket plate, handle part and sleeve for the reception of a bolt to hold the bracket plate, handle and bail in assembled relation. Another aperture is formed in the sleeve into which an additional tab mounted on the bracket plate engages. The bolt connection, thereby, primarily, prevents the handle and bail from vertical movement relative to one another, while the tabs and slots on the

sleeve and bracket plate prevent the bail and handle from rotating relative to one another and the engagement of the additional tab on the bracket plate, with the additional aperture in the handle, prevents turning of the bail and handle relative to each other.

3,771,886

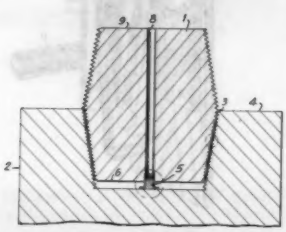
NIPPLE-ELECTRODE ASSEMBLY AND JOINT

James H. Whitwell, Lockport, N.Y., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Filed Aug. 30, 1971, Ser. No. 176,013

Int. Cl. F16b 7/18

U.S. Cl. 403—296 **3 Claims**



The invention relates to nipple-electrode pre-assemblies and joints, such as those used on electric furnaces, and to a method of distributing thread clearance throughout the preassembly and/or joint. This method includes: the providing of at least one lengthwise hole between each end of the nipple, said hole being substantially axial or parallel to the axis and internally threaded for at least a portion of its length; the pre-positioning of the nipple in the socket of the electrode section into which the nipple is threaded so as to provide a clearance between the non-load bearing flanks of the nipple threads and said threaded electrode socket; and the insertion within one end of the lengthwise hole and the space between the base of the nipple and the bottom of the socket of the electrode section of a mechanical adjusting member having external threads which correspond to the internal threads of the lengthwise hole, which member by adjustment with a suitable tool inserted into the hole of the projecting end of the nipple and by turning within the threaded lengthwise hole, thereby causes or is capable of causing relative axial movement of the nipple with respect to the electrode section so as to bring or keep the load bearing flanks of the nipple threads and the electrode socket section threads into contact securing the nipple in this position. This thus provides and/or maintains the aforedescribed pre-positioning and thread clearance and thereby also provides room for any excessive diametrical expansion of the nipple over that of the electrode socket when the assembly is heated during service.

3,771,887

NIPPLE-ELECTRODE ASSEMBLY AND JOINT

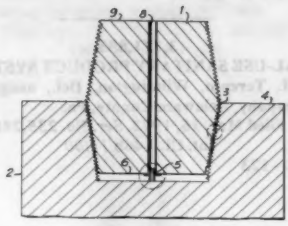
Sidney J. S. Parry, Elizabethton, Tenn., and James H. Whitwell, Lockport, N.Y., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Aug. 30, 1971, Ser. No. 176,146

Int. Cl. F16b 7/18

U.S. Cl. 403—296 **5 Claims**

The invention relates to nipple-electrode pre-assemblies and joints, such as those used on electric furnaces, and to a method of distributing thread clearance throughout the preassembly and/or joint. This method includes: the providing of at least one lengthwise hole between each end of the nipple, said hole being substantially axial or parallel to the axis; the pre-positioning of the nipple in the socket of the electrode section into which the nipple is threaded so as to provide a clearance between the non-load bearing flanks of the nipple threads and said threaded electrode socket; and the insertion within one end of the lengthwise hole and the space between the base of the nipple and the bottom of the socket of the electrode section of a mechanical adjusting means, which means, by adjustment with a suitable tool inserted into the hole of the projecting end of the nipple and by turning within the lengthwise hole, thereby causes or is capable of causing relative axial



movement of the nipple with respect to the electrode section so as to bring or keep the load bearing flanks of the nipple threads and the electrode socket section threads into contact securing the nipple in this position. This thus provides and/or maintains the aforedescribed prepositioning and thread clearance and thereby also provides room for any excessive diametrical expansion of the nipple over that of the electrode socket when the assembly is heated during service.

3,771,888

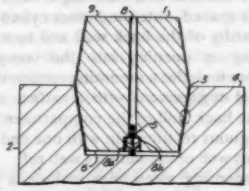
NIPPLE-ELECTRODE ASSEMBLY AND METHOD OF MAKING SAME

Irving William Gazda, Johnson City, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,307

Int. Cl. H05b 7/06

U.S. Cl. 403—343 **17 Claims**



The invention relates to nipple-electrode pre-assemblies and joints, such as those used on electric furnaces, and to a method of distributing thread clearance throughout the preassembly and/or joint. This method includes: the providing of at least one lengthwise hole between each end of the nipple, said hole being substantially axial or parallel to the axis and preferably enlarged in cross-sectional area for a portion of its length at one end of the nipple; the threading of one end of the threaded nipple into the internally threaded socket of the preassembly electrode section to such a degree and in such a manner that by adjustment of a mechanical adjusting means to be inserted later into the lengthwise hole from the other end of the nipple, it is possible to provide or maintain a clearance between the non-load bearing flanks of the nipple threads and of said threaded electrode socket, the other end of said threaded nipple also projecting outwardly from said socket; the insertion of the mechanical adjusting means through the projecting end of the lengthwise hole and the positioning of it in the opposite end of the lengthwise hole, said means being capable of being adjusted from the end of the hole through

which it is inserted so as to cause or be capable of causing relative axial movement between the nipple and the electrode section of the pre-assembly, said adjustable spacing means comprising an internally threaded outer member whose position becomes fixed in the said opposite end of said lengthwise hole of the nipple, and a corresponding externally threaded inner member capable of axial movement within said outer member; and the adjustment of the inner member by the use of a suitable tool inserted into the hole of the projecting end of the nipple so as to bring or keep the load bearing flanks of the nipple and the electrode socket section into contact securing the nipple in this position, thus providing said clearance between the non-load bearing flanks of the nipple threads and of said threaded electrode socket.

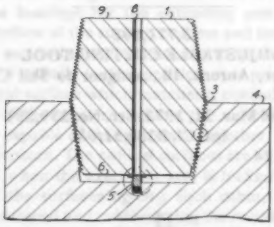
The pre-assembly (or assembly) so made is thus adapted to be added to a second electrode section to complete the making of the electrode joint by threading the projecting end of the nipple into said second electrode section thereby also providing substantially even distribution of clearance between the nipple threads and the threads of the sockets of the electrode sections in the making of the final joint assembly. This thus provides and/or maintains the aforedescribed thread clearance and thereby also provides room for any excessive diametrical expansion of the nipple over that of the electrode sockets of the joint when the pre-assembly and joint are heated during service.

3,771,889

NIPPLE-ELECTRODE ASSEMBLY AND JOINT

James H. Whitwell, Lockport, N.Y.; Sidney J. S. Parry, and Irving W. Gazda, both of Elizabethton, Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Aug. 30, 1971, Ser. No. 176,145
Int. Cl. F16b *7/18*
U.S. Cl. 403—296 **6 Claims**



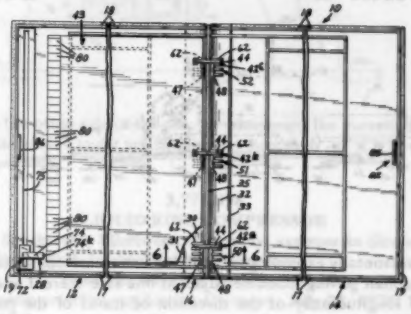
The invention relates to nipple-electrode pre-assemblies and joints, such as those used on electric furnaces, and to a method of distributing thread clearance throughout the pre-assembly and/or joint. This method includes: the providing of at least one lengthwise hole between each end of the nipple, said hole being substantially axial or parallel to the axis; the pre-positioning of the nipple in the socket of the electrode section into which the nipple is threaded so as to provide a clearance between the non-load bearing flanks of the nipple threads and said threaded electrode socket; the attachment of a mechanical adjusting means to the bottom of the socket of the electrode section before the pre-positioning of the nipple in said socket, said mechanical adjusting means being attached in such a manner as to be in alignment with the lengthwise hole in the nipple when the nipple is threaded into the socket; and the adjustment of the mechanical means by employing a suitable tool inserted into the hole of the projecting end of the nipple which by engagement with the adjusting means and by turning, thereby causes the adjusting means to contact the base of the nipple and thereby causes or is capable of causing relative axial movement of the nipple with respect to the electrode section so as to bring or keep the load bearing flanks of the nipple threads and the electrode socket section threads into contact securing the nipple in this position.

3,771,890

LOOSE-LEAF BINDER APPARATUS

Leonard A. Notto, St. Paul, Minn., assignor to Data Tactics, Inc., St. Paul, Minn.

Filed May 28, 1971, Ser. No. 147,979
Int. Cl. B42f *13/02*
U.S. Cl. 402—21 **6 Claims**



A loose-leaf paper binder having the appearance of a hard cover book and formed from a single piece of molded plastic. The paper is bound by three split rings which are each pivotably retained by a pair of ring bosses spaced along the inner back surfaces of the front and rear covers, one boss of each pair on the front cover and the other boss oppositely disposed along the rear cover. This attachment causes a double pivoting action of the rings during the opening and closing of the covers facilitating movement of the rings through the margin holes in the bound paper. The rings are retained within the ring bosses in a slightly expanded condition which biases the covers closed (when in their closed position) and open (when in their open position).

3,771,891

PORTABLE RINK ASSEMBLY

Boguslaw K. Nirenski, Sheboygan, and R. Bruce Grover, Kohler, both of Wis., assignors to Vinyl Plastics, Inc., Sheboygan, Wis.

Filed Sept. 15, 1971, Ser. No. 180,686
Int. Cl. E01c *5/00*
U.S. Cl. 404—40 **1 Claim**

An artificial ice skating rink is formed of square panels of plastic sheet material joined together by cooperating tongues and grooves formed on the edges of the panels. The panels are

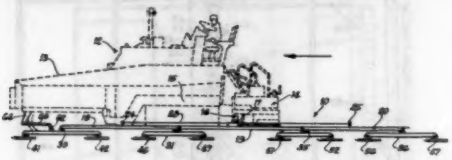
clamped together by pairs of opposing channel members retained around the periphery of the rink and drawn together by steel straps running along the underside of the rink.

3,771,892

MOBILE GRADE REFERENCE DEVICE FOR A PAVING MACHINE

Julian M. Munyon, Big Rock, and Ronald W. Beaty, Aurora, both of Ill., assignors to Barber-Greene Company, Aurora, Ill.

Filed Nov. 26, 1971, Ser. No. 202,127
Int. Cl. E01c *19/12*
U.S. Cl. 404—84 **13 Claims**



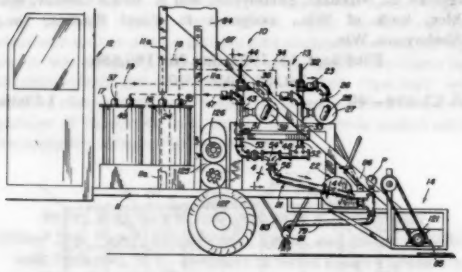
Horizontally extending, articulated beams are connected to an asphalt paving machine adjacent one side thereof and extend longitudinally of the direction of travel of the paving machine. A grade reference stringline is mounted on the beams and is engaged by the sensor of screed control sensing means. A plurality of separate sub grade engaging skids are connected to the beams for supporting the latter; these skids are positioned longitudinally of the beams at randomly selected spacings. The skids are connected in pairs from sub beams, each of the latter being pivotally supported on its longitudinal midpoint.

3,771,893

PAVEMENT MATERIAL APPLYING APPARATUS

Orville L. Miller, 2S, 116 Apache Dr., Wheaton, Ill.

Filed Apr. 15, 1971, Ser. No. 134,137
Int. Cl. E01c *19/12*
U.S. Cl. 404—101 **4 Claims**



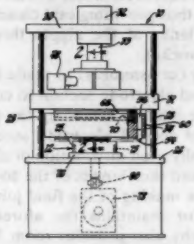
A vehicle having a resin blending and spraying assembly and an aggregate spreader assembly mounted thereon. The two assemblies are operated simultaneously and located so that aggregate is deposited on a resin coating applied on the pavement by spray means. The blending and spraying system includes a static and dynamic mixing means for blending multicomponent resin compositions and also a novel resin flow and recycling arrangement. The aggregate spreader assembly is of lightweight construction and includes a feed roll which is arranged to assume a minimum of the weight of the aggregate in the aggregate spreader hopper.

3,771,894

CIRCULAR ARC GROOVE CUTTING MACHINE

Raymond Happy, Wayne, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 25, 1972, Ser. No. 291,783
Int. Cl. B23b *39/28*
U.S. Cl. 408—54 **3 Claims**



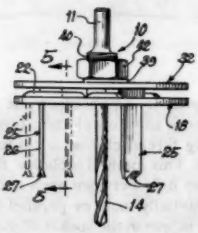
A groove cutting machine for cutting a circular arc groove of constant depth between two apertures in a workpiece has a rotary tool head rotatable about the center line of the circular arc groove to be cut carrying a plurality of relatively movable teeth which are guided by a stationary cam to successively extend while traversing one of the apertures in the workpiece from a retracted position clear of the workpiece to a cutting position that is maintained through a circular arc as long as the groove to be cut with the teeth having progressively larger cutting depth so that they provide progressively deeper cuts in the workpiece and then to successively retract as they traverse the other aperture to their retracted positions all in less than one complete tool head revolution.

3,771,895

ADJUSTABLE CUTTING TOOL

Dieter B. Meyer, Aurora, Ill., assignor to Skil Corporation, Chicago, Ill.

Filed Mar. 31, 1972, Ser. No. 239,891
Int. Cl. B23b *51/08*
U.S. Cl. 408—174 **2 Claims**



A shank has a support disk concentrically secured thereto. The support disk includes three radially extending slots and a pair of integral ribs adjacent each slot, each pair of ribs being disposed one on each side of the associated slot in longitudinal relationship therewith. A one-piece cutting member is mounted in each slot and includes support arms in sliding engagement with the ribs. An adjustment disk is concentrically mounted on the shank for rotation relative thereto; this disk includes arcuate slots each of which receives a projection on one of the cutting members. Movement of the adjustment disk provides for the simultaneous and equal radial movement of

the cutting members. Clamping means are provided for releasably holding the cutting members in their selected positions.

3,771,896

RADIAL BORING MACHINE WITH EXTENDING, ADJUSTABLE BORING HEAD

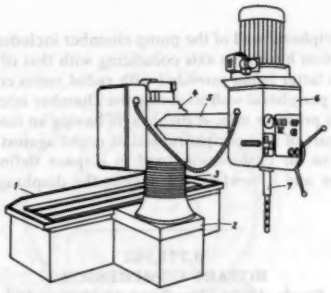
Emil Karl Witzig, Leonberg; Rudolf Frank, Ludwigsburg, and Willi Klein, Denkendorf, all of Germany, assignors to Emil Karl Witzig, Leonberg and Rudolf Frank, Ludwigsburg, Germany, by said Willi Klein

Filed Sept. 2, 1971, Ser. No. 177,381

Claims priority, application Germany, Sept. 5, 1970, P 20 44 099.7

Int. Cl. B23b *39/12*

U.S. Cl. 408—237 11 Claims



The vertical support for the extension arm carrying the boring head of the boring machine includes a hollow support column, the bearings for the extending arm being located within the hollow of the support column and interconnecting a bearing pin secured to the extension arm; to secure the extension arm in a radially locked position, it is preferably formed with a conical surface which matches a conical surface within the hollow of the support column, the matching conical surfaces being capable of being pressed together, for example by hydraulic pressure. The conical surfaces are so located and arranged that when the extension arm is locked in position, by pressure of the surfaces against each other, loading on the bearings is reduced and, additionally, the reaction force due to operation of a boring tool from the boring head tends to press the conical surfaces together.

3,771,897

VIBRATORY CONCRETE PLACER

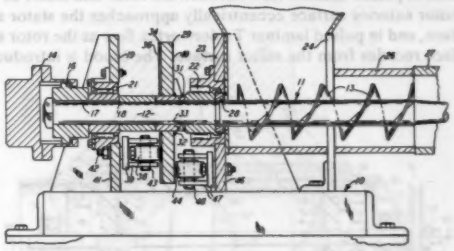
Bernard G. Braun, Waterford, Wis., assignor to J.I. Case Company, Racine, Wis.

Filed May 1, 1972, Ser. No. 249,264

Int. Cl. F04d *25/06*

U.S. Cl. 415—72 5 Claims

A vibratory concrete placer having an auger with a shaft and auger flights all rotatable for moving concrete therealong. A hopper is disposed above the auger flights for feeding concrete to the auger, and a disc rotates with the auger and is spaced to the side of the flights and has a roller in rolling contact with the face of the disc to the side opposite the flights. The disc face then has depressions therein and the roller rolls into the depressions and thereby permits the auger to move axially toward the roller, and, when the roller rolls out of the depressions, the auger is forced in the other direction, and thus the vibratory motion is created and is against the resistance of the concrete on the auger flights. A limiting roller



is on the other side of the disc for restraining the movement of the assembled auger and disc in that direction.

3,771,898

LIQUID RING COMPRESSOR

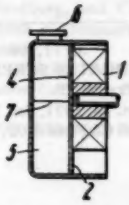
Udo Segebrecht, Ellerbrook, Germany, assignor to Siemen & Hinsch MbH, Itzehoe/Holstein, Germany

Filed July 20, 1971, Ser. No. 164,374

Claims priority, application Germany, July 22, 1970, P 20 36 295.2

Int. Cl. F04d *5/00*

U.S. Cl. 415—53 9 Claims



A liquid seal compressor with control discs arranged transversely of the impeller and provided with a suction port and a pressure port, with a pressure chamber behind the pressure port and with a pressure delivery pipe on the pressure chamber, the pressure chamber being connected on one side with the pressure delivery pipe and on the other side with the pressure port, in which the part of the pressure chamber connected with the pressure delivery pipe is partially separated from the part connected with the pressure port by at least one wall descending into the zone of the pressure chamber filled with liquid.

3,771,899

PULSATOR PUMP AND HEAT EXCHANGER FOR BLOOD

Robert C. Brumfield, 73 Emerald Bay, Laguna Beach, Calif.

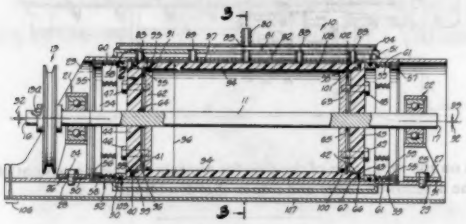
Filed Dec. 13, 1971, Ser. No. 207,162

Int. Cl. F04 *7/0*; F03 *5/00*

U.S. Cl. 415—90 3 Claims

A slow variable speed drive rotates a pulsator pump and heat exchanger which can circulate pulsed blood flow extracorporeally at a required blood temperature to a patient. The pump has a cylindrical rotor shell permanently mounted in a closely fitting internally cylindrical stator housing. The rotor has a support shaft which is eccentrically disposed parallel to the internal axis of symmetry of the stator housing and also to the rotor symmetry axis.

Thus the rotor shell has its exterior surface also eccentrically disposed parallel to the rotor shaft axis of symmetry, providing controlled laminar flow of admitted blood. Laminar flow pumping means are provided, together with Taylor mixing vortices. Admitted patient blood is pumped as a thin blood film in pulsed laminar flow between the rotor and stator as the rotor exterior surface eccentrically approaches the stator surface, and in pulsed laminar Taylor vortex flow as the rotor surface recedes from the stator surface. The blood is introduced



into the pump through a manifolded blood inlet having a longitudinal groove disposed in the inner face of the stator housing, the groove distributing blood to the annular space between the rotor and stator. A second similar blood outlet combination includes a longitudinal groove in the inner stator face, facilitating blood removal from the pump. The manifolded and jacketed stator housing provides heat transfer means for controlling the temperature of treated-blood of the patient.

3,771,900

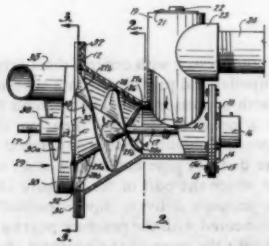
GRADUATED SCREW PUMP

Samuel J. Baehr, LaPrairie, Ill.

Filed Oct. 14, 1971, Ser. No. 189,424

Int. Cl. F04d *3/02, 29/52*

U.S. Cl. 415—72 **7 Claims**



An improved pump of the rotary or centrifugal type utilizing paired, opposed, spiral ramps mounted on a rotating conical impeller within a frusto-conical housing, the ramps starting and ending approximately 180° opposed from one another and running in the same direction on the impeller hub outer surface substantially 360° each.

ERRATA

For Classes 415—181 thru 415—131 see:
Patents Nos. 3,771,925 thru 3,771,927

3,771,901

ROTARY PUMP

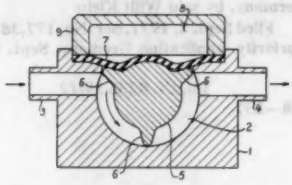
Stig Ake Gosta Svensson, Sodertalje, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Mar. 10, 1972, Ser. No. 233,692

Claims priority, application Sweden, Mar. 16, 1971, 3347/71

Int. Cl. F01c *5/04*

U.S. Cl. 418—156 **4 Claims**



The peripheral wall of the pump chamber includes a surface of revolution having its axis coinciding with that of the pump rotor, the latter being provided with radial vanes cooperating with said peripheral wall to divide the chamber into a suction side and a pressure side. A diaphragm having an inner surface forming part of said peripheral wall is urged against the pump rotor by an air cushion enclosed in a space defined by the diaphragm and a bowl seated against the diaphragm's outer surface.

3,771,902

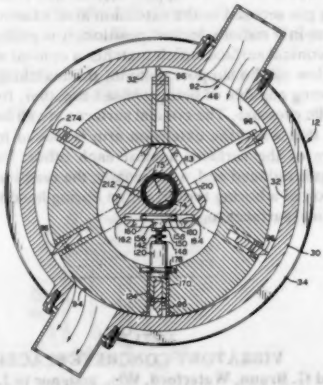
ROTARY COMPRESSOR

Robert G. Bandy, 10206 Lima Road, Ft. Wayne, Ind.

Filed Sept. 22, 1971, Ser. No. 182,786

Int. Cl. F01c *1/00*; F03c *3/00*; F04c *1/00*

U.S. Cl. 418—91 **10 Claims**



A cylindrical casing has a rotor mounted for rotation within the casing on an axis which is radially offset from the axis of the casing and the rotor drives a number of angularly spaced blades which have their center of rotation defined by the central axis of the casing. The mounting for the blades includes radial adjustment clearance from the confronting surface of the casing and the mounted radially inner portions of the blades are adapted to move chordally relatively to their mounting means as the blades rotate. The mounting for the blades are staggered both axially along the longitudinal axis of the casing and are also displaced angularly relative to each other. Between the mounted ends of the blades and the

mounting means of the blades are roller means which facilitate an antifriction back and forth movement of the mounted ends of the blades relatively to the mounting means.

3,771,903

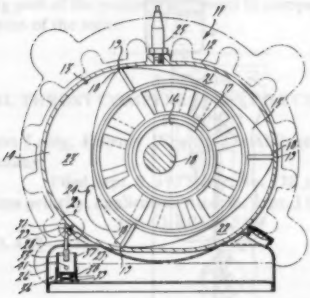
LUBRICATING SYSTEM FOR ROTARY MACHINE

Robert W. King, R.R. 4, Sidney, Ohio, and Charles J. Grogean, R.R. 1, Russia, Ohio

Filed Feb. 1, 1972, Ser. No. 222,547

Int. Cl. F04c *27/02*; F16h *7/12*; F01c *21/04*

U.S. Cl. 418—84 **4 Claims**



A lubricating system primarily for a rotary piston machine such as a rotating internal combustion engine. The lubricating system includes a conduit that leads from the lubricant sump to a chamber of the mechanism that cyclically changes in volume. When the volume is increasing, the pressure differential acting on the conduit forces oil or other lubricant from the sump into the chamber to lubricate the rotating members. In one embodiment, the pressure differential caused by the changes in volume of the chamber is also used to deliver lubricant to bearings of the mechanism. In each embodiment a capillary device in the form of a porous member meters the flow of lubricant. A temperature compensated element is also incorporated for regulating the flow rate in response to changes in temperature and, accordingly, viscosity.

3,771,904

ROTOR FOR ROTARY-PISTON MECHANISM

Max Ruf, Obereisesheim, Germany, assignor to Aude Nsu Auto Union Aktiengesellschaft, Neckarsulm, and Wankel GmbH, Lindau, Bondensee, both of Germany

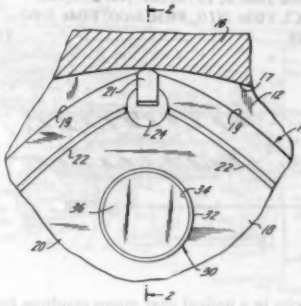
Filed Mar. 8, 1972, Ser. No. 232,702

Claims priority, application Germany, Mar. 16, 1971, P 21 12 615.8

Int. Cl. F01c *1/02*

U.S. Cl. 418—61 **6 Claims**

In a rotary piston mechanism of the Wankel type the rotor has an improved bearing means for limiting the lateral movement of the piston between the end walls of the mechanism housing. This improved bearing means comprises a plurality of wear members each of which is formed by spraying a powdered material having self-lubricating and wear-resisting characteristics in a shallow recess or pocket formed by a rim or bead projecting from the end face of the rotor.



3,771,905

ROTARY-PISTON MACHINE

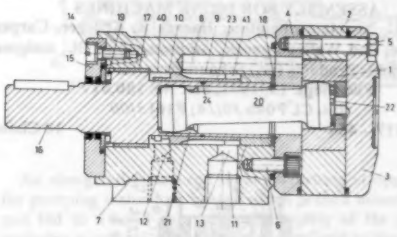
Carl Verner Ohrberg, Nordborg, and Carsten Georg Otto Petersen, Waldenburg, both of Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Feb. 16, 1972, Ser. No. 226,658

Claims priority, application Germany, Feb. 17, 1971, P 21 07 493.1

Int. Cl. F01c *1/02*; F03c *3/00*; F04c *1/02*

U.S. Cl. 418—61 **3 Claims**



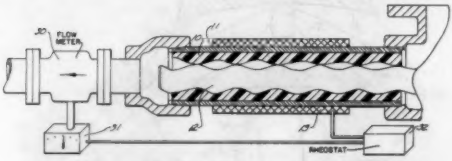
The invention relates to a rotary piston type machine in which an externally toothed wheel and an internally toothed ring form displacement chambers, and one of the toothed elements is connected by way of a universal joint shaft to a rotary slide which, together with a valve part connected to the other toothed element, forms a diversion valve. In such machines the connection between the one toothed element and the associated rotary slide, by way of the universal joint shaft, results in a certain amount of play. This causes leading and lagging between cooperating valve parts with the result that the machine suffers a loss in capacity because of imprecise control of the rotary slide. The lead and lag angles are even greater if the universal joint shaft is coupled to the main shaft and undergoes additional torsion with increasing input and output capacity of the machine. Means are provided to slightly rotate one of the valve elements relative to the main shaft in the reversed direction to compensate for the leading or lagging tendencies referred to.

3,771,906

TEMPERATURE CONTROL OF STATOR/ROTOR FIT IN HELICAL GEAR PUMPS

John David Bourke, Springfield, Ohio, assignor to Robbins & Myers, Inc., Springfield, Ohio

Filed June 5, 1972, Ser. No. 259,986
Int. Cl. F01c *1/10;* **F03c** *3/00;* **F04c** *5/00*
U.S. Cl. 418—48 **13 Claims**



Loss of capacity in a helical gear pump resulting from wear of parts is restored by raising the temperature of the stator, or by raising the temperature of the stator and also the temperature of the fluid being pumped. Regardless of the state of wear, the capacity of a helical gear pump operating against elevated discharge pressures is improved by raising the temperature or temperatures as above, whereby to produce a tighter fit between the elements. Various alternative means for raising the temperature or temperatures are disclosed.

ERRATA

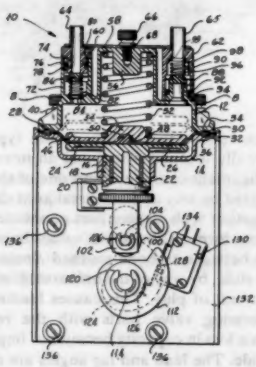
For Classes 416—196 thru 416—121 see:
Patents Nos. 3,771,922 thru 3,771,924

3,771,907

SIMPLIFIED POSITIVE DISPLACEMENT SYRUP PUMP ASSEMBLY FOR DRINK MACHINES

Charles G. Neumann, Palatine; Harvey R. Krueger, Carpentersville, and Walter Panock, Addison, all of Ill., assignors to Reynolds Products Inc., Schaumburg, Ill.

Filed Sept. 13, 1971, Ser. No. 180,017
Int. Cl. F04b *39/14;* **F16j** *3/00*
U.S. Cl. 417—454 **10 Claims**



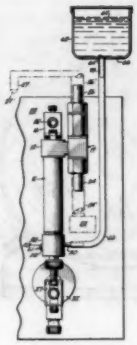
A simplified positive displacement syrup pump for a drink machine or the like in which a swingable retaining arm releasably holds inlet and outlet valve assemblies in position on an upper chamber shell having a lower peripheral flange which is releasably secured to a peripheral flange of a lower chamber shell with an integral O-ring on the pump diaphragm clamped between the flanges and with a spring bearing between the upper shell and a plate located over the central portion of the diaphragm and with the piston head of a piston rod, extending through the lower shell, in engagement with the underside of the diaphragm.

3,771,908

APPARATUS AND PROCESS FOR PUMPING GLUEY MATERIAL

Sidney Rosen, 2701 Rockwood Ave., Baltimore, Md.

Filed Nov. 6, 1970, Ser. No. 87,571
Int. Cl. F04b *15/00*
U.S. Cl. 417—446 **11 Claims**



A pump for use in pumping gluey material and a process for pumping gluey material in which the pump includes a cylinder having a chamber through which gluey material is adapted to be pumped on one side of the piston head and a sealed chamber on the other side of the piston head in fluid communication with a solvent contained in a receptacle means normally arranged above the chamber through which the gluey materials are pumped to bathe the sliding surfaces and resist build-up of gluey materials tending to jam the pump. The pump also includes a bleed valve means for initiating operation of the apparatus and process and also a suck-back mechanism comprising a normally closed but partially opened one-way valve effective to work the discharged material during the aspirating stroke of the pump and to resist setting of the materials at the discharge station or a dispensing point to which the pump flows materials.

3,771,909

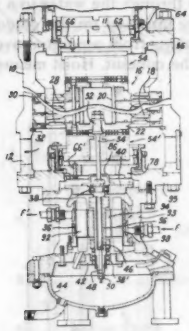
VERTICAL TURBOMOLECULAR PUMPS

Marcel-Gustave Rousseau, Saint Denis, and Robert Berthoumieux, Paris, both of France, assignors to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation and Commissariat A L'Energie, Atomique, Paris, France

Filed Mar. 25, 1971, Ser. No. 128,073
Claims priority, application France, Apr. 1, 1970, 7011572
Int. Cl. F04b *17/00, 35/04;* **F01d** *1/36;* **F16c** *35/00, 39/00*
U.S. Cl. 417—424 **8 Claims**

The vertical rotating assembly of the turbomolecular pump is centered by two magnetic bearings located each on one side of the pump rotor and supported by ball bearings located

under the rotor, one on each side of the driving motor. The length of transmission shaft portion between the rotor and the

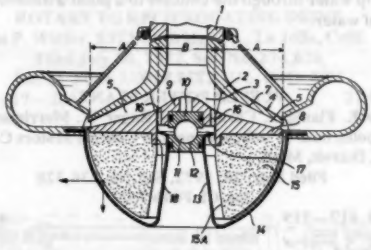


rotating part of the motor is sufficient to compensate for radial deflection of the rotor.

3,771,910
AXIAL THRUST COMPENSATION FOR CENTRIFUGAL PUMPS

Nikolaus Laing, Hofener Weg 35-37, Aldingen bei Stuttgart, Germany

Filed Sept. 8, 1971, Ser. No. 178,600
Claims priority, application Austria, Sept. 11, 1970, 8260
Int. Cl. F04b *35/04*
U.S. Cl. 417—420 **6 Claims**



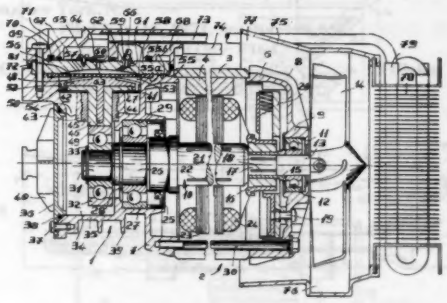
An inductive driven centrifugal pump having an impeller mounted in a bearing for limited universal movement and including a seal between the impeller and a portion of the pump casing and fluid passage means connecting opposite sides of the impeller whereby fluid pressure acting on opposite sides of the impeller is equalized.

3,771,911
COMPRESSOR UNIT FOR REFRIGERATION INSTALLATIONS

Bruno Turci, Ravenna, Italy, assignor to Indel S.P.A., Sant' Agata Feltria, Italy

Filed Jan. 10, 1972, Ser. No. 216,373
Int. Cl. F04b *43/04*
U.S. Cl. 417—413 **1 Claim**

Compressor unit for refrigeration installations, comprising an electric motor having a shaft and a cooling fan outside the casing of the electric motor. The fan is fixed on an extremity of the shaft projecting outside said casing. Cam means are provided on the other extremity of the shaft, opposite to the fan. A hollow body surrounds the cam means. A cylinder formation is provided in the hollow body and extends perpendicular to the shaft in alignment with the cam means. A piston is slidable within the cylinder formation. The piston has a piston rod portion engaging the cam means. Inlet and outlet valve means

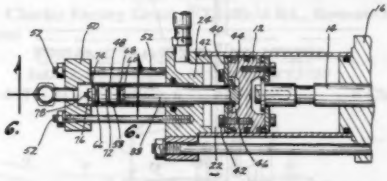


are provided in the cylinder formation, duct and manifold means are provided for connecting the cylinder formation with the refrigeration circuit and sealing means for said cylinder formation and said piston.

3,771,912
MULTIPLE FLUID PUMP

George D. Conlee, Humboldt, Iowa, assignor to Slifer Manufacturing Company, Incorporated, Humboldt, Iowa

Filed May 16, 1972, Ser. No. 253,805
Int. Cl. F04b *17/00*
U.S. Cl. 417—397 **6 Claims**



An elongated piston rod includes pistons at opposite ends for pumping water to a heater which is then mixed with acid and fed to a hand spray gun. Outwardly of the pistons for pumping water are pistons for pumping acid to the water line between the heater and the spray gun. A threaded bolt rigidly connected to an extension on the water piston is threadably connected to the acid piston and insulated from the acid chamber. A continuous ring is mounted on the outer ring of the acid piston and held in place by a retainer and bolt connected to the acid piston. The acid piston sleeve and head are connected to the water piston head by a plurality of bolts.

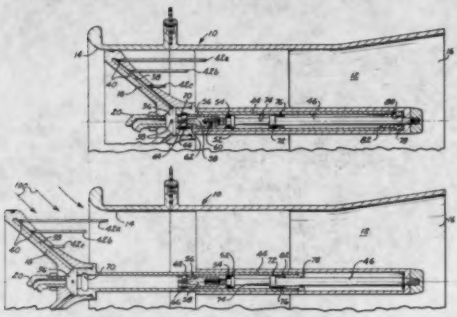
3,771,913
ASPIRATOR

James R. MacPherson, Falls Church, and Paul W. Serbu, Vienna, both of Va., assignors to The Susquehanna Corporation, Fairfax County, Va.

Filed May 18, 1971, Ser. No. 144,512
Int. Cl. F04f *5/46, 5/48*
U.S. Cl. 417—179 **21 Claims**

Embodiments of inflation aspirators are disclosed which use the pressure of the primary, high-pressure gas source to open and close the aspirator housing. The closure is connected to a

piston/cylinder arrangement. The cylinder and piston undergo relative axial movement in response to application of the primary gas to open the closure to permit entrainment of ambient



air. Once inflation is complete, the primary source terminates. A reservoir within the aspirator traps sufficient gas at pressure to effect reverse relative movement of the cylinder and piston to close the closure and seal the housing.

3,771,914

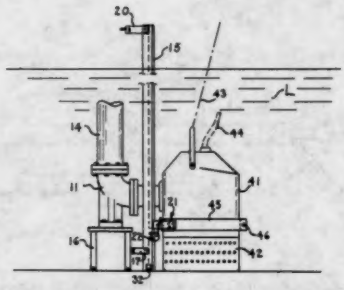
CONNECTING FLANGE ARRANGEMENT OF SUBMERSIBLE PUMP FOR FIXED DISCHARGE OUTLET

Carlos A. Crespo, P.O. Box 906, Stamford, Conn.

Filed May 8, 1972, Ser. No. 251,370

Int. Cl. F04b *17/00, 35/00*

U.S. Cl. 417—360 **3 Claims**



A portable submersible pump having a discharge device permanently submerged in the liquid. Guide bars projecting upwardly from the liquid are connected to the discharge device. The pump unit is provided with sliding members and the guide bars have co-acting auxiliary finger guides. A positive mechanical seal is effected when the pump unit is lowered into the liquid along the guide bars and the sliding members are cammed by the auxiliary finger guides into sealing engagement with the fixed discharge outlet.

3,771,915

SUBMERSIBLE PUMP REMOTELY CONTROLLED DETACHABLE FITTING

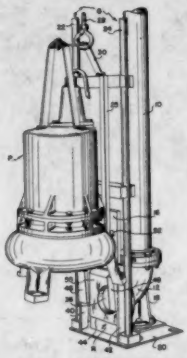
Carl A. Back, Bellville, Ohio, assignor to Peabody Barnes Inc., Mansfield, Ohio

Filed Nov. 9, 1971, Ser. No. 197,231

Int. Cl. F04b *39/14*

U.S. Cl. 417—360 **4 Claims**

A remotely controlled submersible pump detachable fitting assembly for disconnecting a pump from an underwater connection and raising the pump above the water for repairs maintenance or replacement. The assembly includes a liquid conduit having one end submerged in a body of water, a vertical guideway secured to the submerged end of the conduit and extending upwardly through the water to a point thereabove, and a pump slidably disposed on the guideway for selective displacement therealong from a point above the water to the submerged end of the conduit. Hoist means are provided for



raising and lowering the pump on the guideway. Detachable connecting means for detachably connecting the pump to the submersed end of the conduit in substantially leakproof relation therewith are provided on the pump outlet and on the submerged end of the conduit, whereby the pump may be lowered on the guideway through the water to the submersed end of the conduit and connected thereto to enable the pump to pump water through the conduit to a point exteriorly of the body of water.

3,771,916

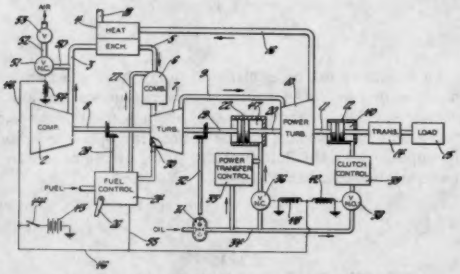
PUFFER POWER PLANT

Eugene E. Flanigan, Carmel, and Roger W. Merriman, Indianapolis, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 20, 1972, Ser. No. 236,328

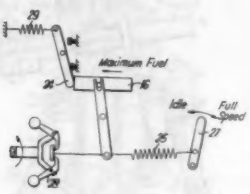
Int. Cl. F04b *9/00*

U.S. Cl. 417—319 **4 Claims**



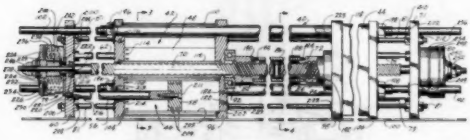
A vehicle-powering gas turbine of the gas-coupled type includes a power transfer clutch between the gas generator turbine and the power turbine of the engine. To use the power plant for blowing air for such purposes as unloading powdered cargo, a bleed from the outlet of the engine compressor is opened and the power turbine is decoupled from the vehicle power transmission and drive wheels and coupled to the gas generator turbine by the power transfer clutch.

3,771,917
FUEL INJECTION SYSTEM
Paul Davies, Maldon, England, assignor to Ford Motor Company, Dearborn, Mich.
Filed July 1, 1971, Ser. No. 158,759
Int. Cl. F04b 49/00; F02d 1/04
U.S. Cl. 417—289 5 Claims



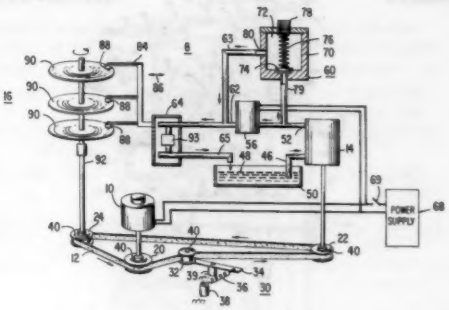
An emission control in which a fuel injection pump has a delivery valve providing a ratio of retraction volume to delivered fuel of between 1 and 1.5, and a low speed fuel stop that increases pump fuel flow over the normal maximum, at low r.p.m.'s, to compensate for the lower delivery at this period resulting from the retardation of injection.

3,771,918
LINEAR POSITIVE DISPLACEMENT PUMP WITH ROTARY TO RECIPROCATING DRIVE
Augustus P. Winter, 8373 Cliffridge Ln., La Jolla, Calif.
Filed July 24, 1972, Ser. No. 274,676
Int. Cl. F04b 3/00; F16h 25/16; F01b 9/06
U.S. Cl. 417—266 21 Claims



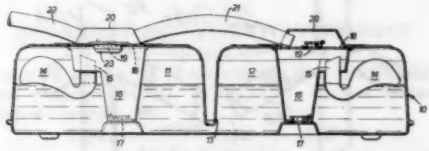
A multiple stage, linear, reciprocating, balanced-unopposed compressor is driven by an analog of a turnbuckle with the drive having first and second pairs of associated recirculating ball bearing nuts and screws. The ball bearing nuts are constrained against axial displacement and are driven by a source of rotary power. The pairs of recirculating ball bearing nuts and screws are oppositely threaded and the screws are coupled together for reciprocation together. The screws are successively braked to produce reciprocation. The screw under power compresses gas in a plurality of stages in an isomer by driving a plurality of pistons. When the power stroke of a screw is completed, its brake is released and the other screw braked to compress gas in a second isomer identical with the first. The compression cylinders in each isomer are disposed in a manifold which can be used to collect blow-by gases or as a cooling jacket. A cylinder of each isomer is the source of gas for the next higher stage cylinder in the other isomer until the highest stage is reached. The stroke of the compressor is variable for warmup purposes.

3,771,919
BRAKING ARRANGEMENT WHICH INCLUDES HYDRAULIC PUMP
David Frank Wright, Bolton, and Robert Aron Rubenstein, Framingham, both of Mass., assignors to RCA Corporation, New York, N.Y.
Filed Nov. 15, 1971, Ser. No. 198,860
Int. Cl. F04b 41/00; F16d 57/06
U.S. Cl. 417—236 5 Claims



A high inertia load and a hydraulic pump are both driven by a motor via a common mechanical coupling, such as a drive belt. When power is removed from the motor, fluid from the pump is diverted from its normal low impedance path and into a high impedance path. This brakes the pump and the latter brakes the high inertia load and motor via the common mechanical coupling.

3,771,920
PUMP MEANS
Herbert Charles Furney Grant, 5 Eastfield Rd., Ross-on-Wye, England
Filed Sept. 18, 1972, Ser. No. 289,998
Int. Cl. F04b 19/00, 17/00; B63b 13/00
U.S. Cl. 417—211 8 Claims

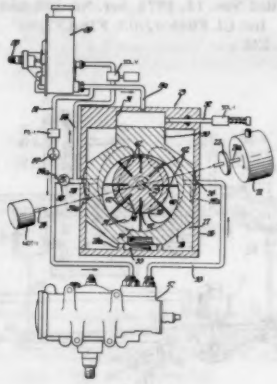


A pump, particularly for use in discharging foul gases from the bottom of a boat, comprises two intercommunicating compartments partly filled with liquid so that, during rocking of the boat, the liquid flows from one compartment to the other. Each compartment contains an inflatable plastics bag and the bags are continuously inflated and deflated to vary the pressure in a chamber having valve-controlled inlet and outlet openings.

3,771,921
REACTOR AIR PUMP DRIVE SYSTEM
Robert P. Rohde, and Thomas W. Weisgerber, both of Saginaw, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 23, 1972, Ser. No. 283,081
Int. Cl. F04b 49/00; B62d 5/10
U.S. Cl. 417—12 3 Claims

A reactor air pump drive system in which the air pump of a vehicle air injection exhaust reactor system is normally driven

during engine operation by a hydraulic motor actuated by hydraulic fluid from the power steering unit of the vehicle, the hydraulic motor driving the air pump through a one-way clutch. When the engine is turned off but it is desirable to continue air flow through a catalytic converter for an additional



period of time, an electric motor is energized to drive the hydraulic motor and thus the air pump, the hydraulic motor being shifted to a zero displacement mode under this condition. Should the power steering system fail, the electric motor is energized to reverse drive the hydraulic motor for operation as a pump to thus provide a reserve power steering feature.

3,771,922

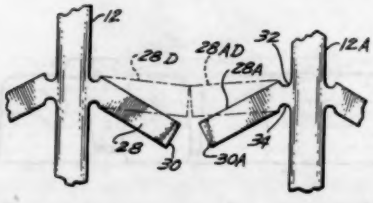
STABILIZED ROTARY BLADES

Alfred C. Tracy, Los Angeles, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Oct. 30, 1972, Ser. No. 301,827

Int. Cl. F01d *5/22*

U.S. Cl. 416—196 **3 Claims**



Projections near the tips of high speed rotary blades are actuated by centrifugal force to ensure uniform spacing between the blade tips as a means of reducing buzz-saw noise.

3,771,923

AUTOGYROS, ESPECIALLY PERMITTING THE USE OF THESE DEVICES AS ECONOMICAL AIRGROUND VEHICLES

Rene Cesar Alexandre Tassin DeMontaigu, Paris, and Rene Stock, Marseille, both of France

Filed Nov. 15, 1971, Ser. No. 198,664

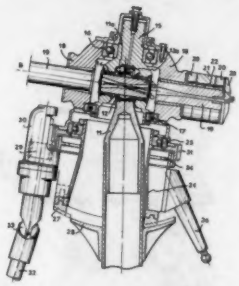
Claims priority, application France, Nov. 13, 1970, 7040547

Int. Cl. B64c *27/50*

U.S. Cl. 416—143 **6 Claims**

Improvements in the rotor system of autogyros permitting the easy folding back of the rotor blades and to ensure the coincidence of the blade axes in a single point.

A smooth ball and socket joint housed in the head of a mast supporting the motor is traversed by a shaft about which there is pivoted a member in the form of a cardan fork carrying bearing centered on the axis of rotation and housed in the hub of the rotor, the articulation axes of oscillation of the rotor



blades being aligned and mounted in such manner in the hub that they pass through the pivotal center of the unit, the centrifugal force of one of the blades being balanced by that of the other so that no reaction due to these forces is produced on the hub irrespective of the direction of inclination of the rotor.

3,771,924

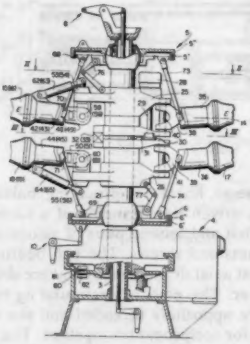
COMBINATION GYROPLANE

Anton Buchstaller, Friedrichshafen, Germany, assignor to Dornier A.G., Friedrichshafen, Bodensee, Germany

Filed Oct. 6, 1970, Ser. No. 78,471

Claims priority, application Germany, Dec. 20, 1969, P 19 63 931.7

U.S. Cl. 416—121 **12 Claims**



This invention relats to a combination gyroplane having a lockable rotor and rotor blades adapted to be retracted in the locked condition, comprising an equal number of rotor blades positioned in at least two planes offset with respect to each other with reference to the rotor axis, and means for maintaining the blade groups in operative position in a staggered arrangement and for causing the rotor blades of the groups to overlap for the retracting operation.

3,771,925

SUPERSONIC CENTRIFUGAL COMPRESSOR

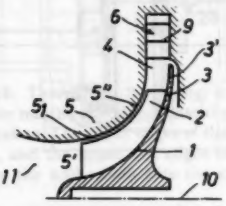
Jean-Marie Eugene Friberg, Bourg-La-Reine, and Jean-Marie Merigoux, Palaiseau, both of France, assignors to Societe Alsacienes De Constructions Atomiques-De Telecommunications Et D'Electronique "Alcatel", Paris, France

Continuation of Ser. No. 104,876, Jan. 8, 1971, abandoned. This application Dec. 18, 1972, Ser. No. 315,961

Claims priority, application Japan, Jan. 14, 1970, 45/7001293

Int. Cl. F04d *21/00, 29/44*

U.S. Cl. 415—181 **8 Claims**



The fixed portion of the rotor casing defines with the disc extension or a rotary disc carrying radially extending blades an annular deceleration space leading into a diffuser whose fixed vanes define passages inclined to the radial direction.

3,771,926

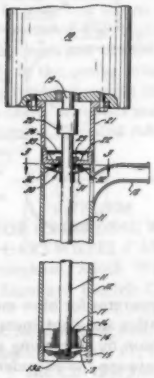
LEAKAGE PREVENTING ARRANGEMENT FOR PRESSURIZED FLUID SYSTEM SUCH AS PUMPS AND THE LIKE

William J. Pardieck, Wilmington, Ill., assignor to R. S. Corcoran Co., New Lenox, Ill.

Filed Dec. 6, 1971, Ser. No. 205,120

Int. Cl. F01d *5/08*

U.S. Cl. 415—176 **4 Claims**



In a pump or other fluid system having a rotatable shaft journaled in a supporting member, such as a wall of the pump chamber, having ambient pressure on one side and a liquid system pressure greater than ambient pressure on the other side, a centrifugal member for preventing leakage of fluid through the shaft journal. The centrifugal member reduces the pressure on the system side of the supporting member to a pressure substantially equal to the ambient pressure, so that there is no pressure differential across the shaft journal. This prevents leakage of pressurized liquid out of the system, and also prevents air from leaking into the system and becoming entrained in the pressurized liquid. In an illustrated embodiment, the centrifugal member comprises a dished annulus spaced from a flat annulus, with a plurality of radial vanes interconnecting the two annuli.

3,771,927

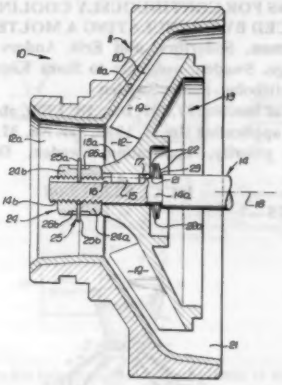
IMPELLER RUNNING CLEARANCE ADJUSTMENT DEVICE

Teddy M. Schiller, Huntington Beach, Calif., assignor to Purex Corporation, Lakewood, Calif.

Filed Mar. 15, 1972, Ser. No. 234,851

Int. Cl. F01d *5/12, 5/30*

U.S. Cl. 415—131 **6 Claims**



A centrifugal pump assembly including a housing and an impeller rotatable on a shaft and within the housing to form clearance therewith at the eye side of the impeller, the shaft defining an axis, in which there is provided (a) yieldable means acting to urge the impeller in one direction along the axis and tending to reduce the clearance, and (b) adjustable means acting to block displacement of the impeller in that direction.

ERRATA

For Classes 418—156 thru 418—48 see:
Patents Nos. 3,771,901 thru 3,771,906

3,771,928

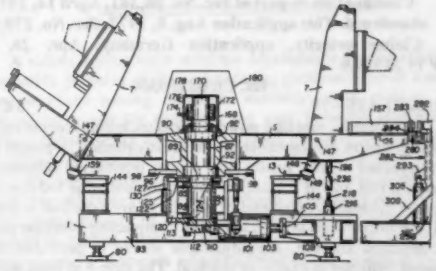
APPARATUS FOR MOLDING POLYURETHANE ARTICLES

Terence M. Gostyn, 35 Broadpath Rd., Don Mills, Ontario, and Waldemar Schilke, 15 Queen St., Trenton, Ontario, both of Canada

Filed June 28, 1971, Ser. No. 157,578

Int. Cl. B29d *27/04*

U.S. Cl. 425—4 R **9 Claims**



Polyurethane articles, such as shoe soles, are molded in a plurality of molds mounted on a turntable for rotation from a

first station for closing the molds to a second station for dispensing reactants into the molds and around the major portion of a circle to an unloading station. During unloading and loading, the molds are horizontal, and during dispensing and travel to the unloading station the molds are tilted, with the base of each mold at an angle of 30° to 75° from the horizontal.

3,771,929

MEANS FOR CONTINUOUSLY COOLING POWDER PRODUCED BY GRANULATING A MOLTEN MATERIAL

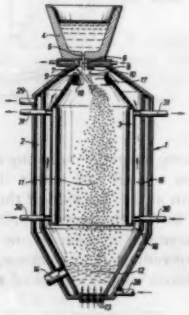
Per Hellman, Soderfors, and Erik Anders Ake Josefsson, Borlange, Sweden, assignors to Stora Kopparbergs Bergslags Aktiebolag, Falun, Sweden

Division of Ser. No. 97,991, Dec. 14, 1970, abandoned. This application Dec. 5, 1972, Ser. No. 312,379

Claims priority, application Sweden, Dec. 15, 1969, 17286/69

Int. Cl. B22d *23/08*

U.S. Cl. 425—7 **1 Claim**



A powder is produced by atomizing molten material by means of a jet of an atomizing fluid. The atomizing zone is surrounded by a wall defining a comparatively narrow passageway, to the effect that the jet of atomizing fluid will act as a jet pump creating a circulation of the gas in the atomizing chamber. Means are provided for cooling said gas.

3,771,930

HYDRAULIC PRESS FOR COMPACTING METAL POWDER

Severin Ginzel, and Peter Niederhuber, both of Munich, Germany, assignors to W. Bussmann K G, Munich, Germany

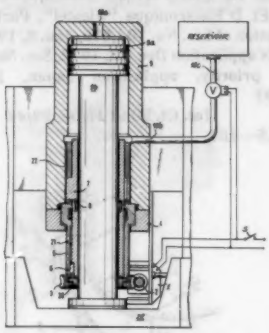
Continuation-in-part of Ser. No. 28,341, April 14, 1970, abandoned. This application Aug. 8, 1972, Ser. No. 278,781

Claims priority, application Germany, Apr. 24, 1969, P 19 20 969.9

Int. Cl. B22f *3/04*

U.S. Cl. 425—78 **5 Claims**

A hydraulic metallic powder press including a press cylinder and a piston displaceable in the press cylinder. A piston rod is connected to the piston and a seal positioned adjacent the piston rod and at a location where the piston is led out of the press cylinder. A free end of the rod bears a die and is adapted to be introduced into a cavity for compacting metallic powder contained therein. An adjustable sleeve is provided in the press cylinder inwardly of the seal. The sleeve at least partially encloses the piston rod and has an external thread and the press cylinder has an internal thread in mating relationship with the sleeve thread. The sleeve further has a slide. A rotatable gland at least partially encloses the sleeve and has a longitudinal groove therein for guiding the slide. The groove runs in the axial direction of the piston rod and a drive motor is



operatively coupled for rotatably moving the gland. Accordingly, the length of the stroke of the die into the cavity is thereby limited.

3,771,931

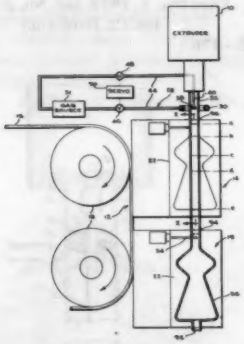
APPARATUS FOR MOLDING PLASTIC ARTICLES

Robert P. Fischer, Lancaster, and Donald H. Straub, Mt. Joy, both of Pa., assignors to Keer Glass Manufacturing Corporation, Los Angeles, Calif.

Filed Aug. 13, 1970, Ser. No. 63,550

Int. Cl. B29d *23/04*; **B29f** *3/08*

U.S. Cl. 425—72 **4 Claims**



A method and apparatus for blow molding of hollow plastic articles such as bottles and containers from continuously extruded tubular parison by employing a cooling system acting upon the parison between the extruder and the molds to control the temperature of the parison as it enters the mold to provide an improved product having walls of relatively uniform thickness.

3,771,932

APPARATUS FOR THE MANUFACTURE OF BRICKS

Hans van Daal, Geilenkirchen, Germany

Filed Mar. 13, 1972, Ser. No. 234,195

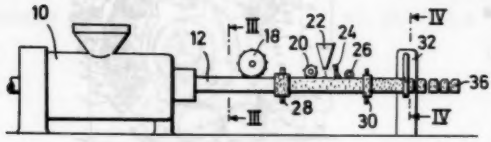
Claims priority, application Germany, Mar. 17, 1971, P 21 12 916.8

Int. Cl. B28b *1/29, 3/12*

U.S. Cl. 425—296 **6 Claims**

A string of brick material is extruded, and at least one surface of the string is engaged with one or more rollers having

surface projections, to form depressions in the string surface. An instrument, such as a smooth-surfaced roller, is then applied to the depression-bearing surface, there being relative movement between the surface and instrument in a direction generally parallel to the surface. As a result, the depressions are deformed, giving the surface the appearance of a hand-



molded brick. Thereafter, the string is cut into individual bricks. A filler may be introduced into the depressions prior to their deformation. The upper edges of the extruded string may be rounded, and the upper cut edges of the bricks may be deformed by the tool which cuts the string into individual bricks.

3,771,933

MOLD FOR FORMING A METAL CORED ELASTOMERIC ROLL

Leroy J. Rowland, 500 Frampton St., Charleston, S.C.

Filed May 19, 1971, Ser. No. 144,829
Int. Cl. B29f *3/10*
U.S. Cl. 425—113 **8 Claims**

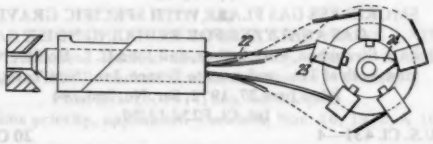
A mold for forming a rubber roll which includes a tubular casing arranged to be attached at one end to a rubber extrusion apparatus and provided with a plate member and cap at opposite ends having ports and central bores for supporting a metal core centrally in the casing interior both the core and plate member being retained against axial movement with the casing inner wall, a cavity of rubber material through the plate member ports to form an extruded rubber roll having a metal core.

3,771,934

APPARATUS FOR EXTENDING WATER-BLOCKED CARTWHEEL CABLE

Paul N. Delves-Broughton, South Wales, England, assignor to International Standard Electric Corporation, New York, N.Y.

Division of Ser. No. 800,178, Feb. 18, 1969, Pat. No. 3,588,313. This application Jan. 11, 1971, Ser. No. 105,598
Int. Cl. B29f *3/03*
U.S. Cl. 425—135 **5 Claims**



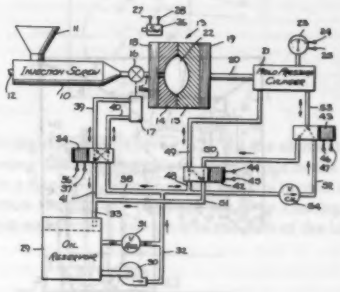
A submersible coaxial cable has a plurality of longitudinal air spaces symmetrically spaced in the dielectric material around the inner conductor with sections collapsed at regular intervals along each air space to form water blocks in the passageways. Apparatus is provided to extrude the dielectric in the desired form and collapse the walls at selected intervals.

3,771,935

INJECTION MOLDING APPARATUS

Erwin Loichen, Muenchener Strasse 60, 8890 Aichach, Germany

Filed July 21, 1971, Ser. No. 164,707
Int. Cl. B29f *1/06*
U.S. Cl. 425—146 **10 Claims**



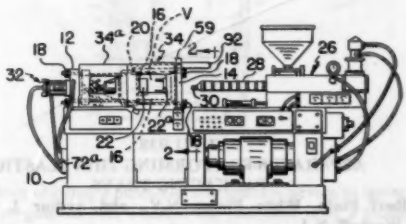
Apparatus for injection molding of plastic in which an injection screw is connected to a two-part mold through a valve which is opened when injection of the plastic is commenced. The mold parts are held together by a hydraulic cylinder and piston assembly, and when the hydraulic pressure exceeds a predetermined value a contact closes which closes said valve, and the mold is opened after a time delay.

3,771,936

SAFETY DEVICE FOR MOLDING MACHINE

Ernest P. Moslo, 12700 Lake Ave., Lakewood, Ohio

Filed May 12, 1971, Ser. No. 142,472
Int. Cl. B30b *15/00*; B29f *1/00*; F16p *3/12*
U.S. Cl. 425—153 **12 Claims**



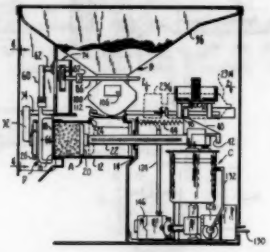
A safety device for a machine mechanism having relatively movable pressure applying operating portions such as a molding machine having relatively movable mold platens, with movable means for shielding the area between said platens when the shielding means is in closed position, for preventing inadvertent insertion of an extremity such as the arm or hand of a workman between the platens during closure thereof, and with the safety device being mechanical and operative to positively stop closure of the platens when the shielding means is out of its closed position. The safety device takes the form of mechanical abutments adapted for holding coaction in connection with the relatively movable platens to prevent the closure thereof in the event that the shielding means is disposed in non-closed position.

3,771,937

APPARATUS FOR FORMING SHAPED POTATO PIECES FROM POTATO DOUGH

James F. Harmon, Richard D. Johnston, John H. Lach, William H. Von Der Lieth, all of Blackfoot, and Thomas L. Murphy, Idaho Falls, all of Idaho, assignors to American Potato Company, San Francisco, Calif.

Filed Aug. 9, 1971, Ser. No. 170,164
Int. Cl. A21c *3/04, 11/18*
U.S. Cl. 425—161 **14 Claims**



Apparatus for combining a dry potato product with water so as to reconstitute the same into a firm potato dough. Apparatus for forming such dough into shaped potato pieces, such as french fry cut potato pieces. An impervious chamber for receiving the dry product and water, and a seal plate associated with the chamber for closing the chamber during reconstitution of the dough and for opening the chamber to permit ejection of the dough therefrom. An improved apparatus for forming the dough into shaped potato pieces as it is ejected from the chamber. A mechanism for metering a precise amount of the dry product into the chamber. A mechanism for metering a precise amount of water at a precisely controlled temperature into the chamber.

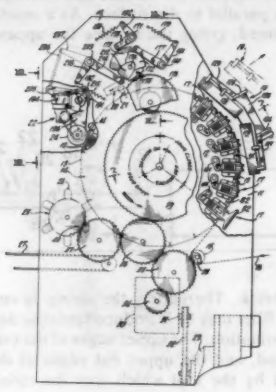
3,771,938

APPARATUS FOR FORMING THIN PLASTIC PACKAGING TRAYS

Albert Pinto, White Plains, N.Y., and Arthur J. Griner, Wyckoff, N.J.

Continuation of Ser. No. 96,568, Dec. 9, 1970, abandoned. This application Oct. 27, 1972, Ser. No. 301,523
Int. Cl. B29c *17/04*
U.S. Cl. 425—174 HR **10 Claims**

A machine for forming thin plastic packaging trays of dished configuration with an upper peripheral edge which lies within a single plane The machine includes a plurality of flat faced vacuum form molds carried on the periphery of a rotating drum. A ribbon of plastic material is continuously delivered to the drum and mechanically clamped to the surface of each mold in consecutive order as the drum rotates. Each section of clamped ribbon is carried past a radiant heater and a vacuum is then applied to draw the softened plastic into the mold. The clamps are disengaged and the trays are held in the molds by a continued application of vacuum while a heated blade moving in a repetitive closed curvilinear path severs the ribbon between adjacent trays and while a pair of



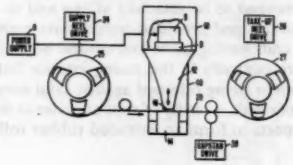
rotating knives trim the edges of the trays. A vacuum operated picker removes the trays from the drum and deposits them on a conveyor.

3,771,939

ULTRASONIC MAGNETIC SURFACE FINISHER

Henry V. Barth, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 39,408, May 21, 1970, abandoned. This application Dec. 21, 1971, Ser. No. 210,582
Int. Cl. B29j *5/00*
U.S. Cl. 425—385 **6 Claims**



An ultrasonic surface finisher for magnetic tapes and other magnetic recording media is disclosed. The ultrasonic vibrations of an ultrasonic generator are transmitted to an impacting hammer which in turn impacts and smooths the surface of the magnetic record media by continual impacting while the record media is supported by a resilient backing pad.

3,771,940

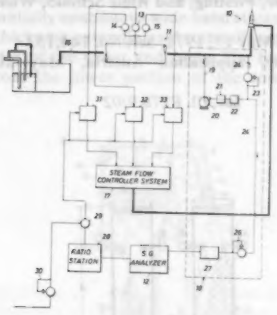
SMOKELESS GAS FLARE WITH SPECIFIC GRAVITY GAS ANALYZER FOR REDUCING NOISE

John J. Stranahan, Port Arthur, and John C. L. Hollier, Nederland, both of Tex., assignors to Texaco, Inc., New York, N.Y.

Filed June 27, 1972, Ser. No. 266,794
Int. Cl. F23d *13/20*
U.S. Cl. 431—4 **20 Claims**

A method and at least one gas flare for carrying out or practicing the method are disclosed for smokeless burning of undesired gas. Combined with a steam aspirating gas flare having a steam flow controller responsive to a gas flow detector to

provide a combustible material is a specific gravity analyzer for controlling the steam flow controller further in relation to



the specific gravity of the gas to be burned for providing a smokeless air-to-gas burning mixture in the flare with less steam usage and reduced noise.

3,771,941

PHOTOFLASH LAMP

Emery G. Audesse, Salem, and Harold L. Hough, Beverly, both of Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Oct. 2, 1972, Ser. No. 294,276
Int. Cl. F21k *5/02*
U.S. Cl. 431—93 **9 Claims**

A percussive-type photoflash lamp having an envelope comprised of a glass having a low coefficient of thermal expansion and a depending metal primer tube which is secured to the glass envelope by means of a graded seal having an intermediate expansion glass disposed between the envelope and the primer tube.

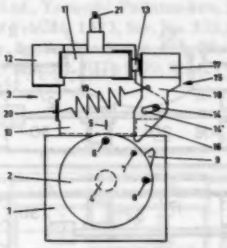
3,771,942

ROTARY VALVE AND PIEZO-ELECTRIC FIRING UNIT

Ernst Sohnchen, Huckeswagen, Germany, assignor to Joh. Vaillant KG, Remscheid Berghauser Strasse, Germany

Filed Oct. 28, 1971, Ser. No. 193,300
Claims priority, application Australia, Nov. 16, 1970, A 10 269
Int. Cl. F23q *7/12*
U.S. Cl. 431—255 **2 Claims**

A gas valve has a knob which is rotated to turn the gas on. This causes a correspondng rotation of a lug on the knob. A lever is pivotally mounted with one end in the path of the lug so as to be contacted by the lug and pivoted as the gas is turned on. The other end of the lever forms a hammer for striking the piezo-electric element of an igniter. A spring resiliently holds the hammer against the element. As the gas is



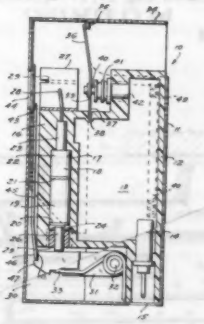
turned on the lug releases the lever to strike the element. The pivotal mounting for the lever is formed by a slot in the lever positioned on a fixed pin, so that as the knob is turned in the gas-off direction the lug will push on the lever causing it to slide on the pin and thereby move out of the path of the lug.

3,771,943

LIGHTER

Hermann Schlamp, Koeln, Germany, assignor to Ranson Corporation, Woodbridge, N.J.

Filed Mar. 22, 1972, Ser. No. 237,185
Claims priority, application Germany, Mar. 23, 1971, P 21 14 476.3; Mar. 23, 1971, P 71 11 384.3
Int. Cl. F23q *2/16*
U.S. Cl. 431—255 **6 Claims**



A lighter utilizing a piezo-electric ignition device to ignite a stream of gaseous fuel wherein the fuel tank is of a molded plastic material defining a fuel reservoir and the piezo-electric ignition device is disposed within a housing integral with the fuel tank.

3,771,944

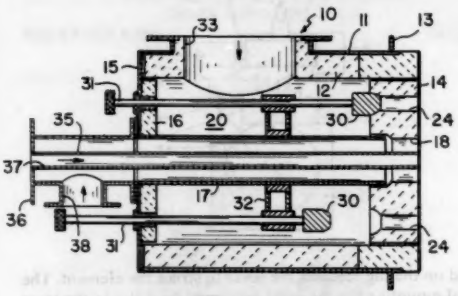
ADJUSTABLE FLAME BURNER

James E. Hovis, and Harry P. Finke, both of Pittsburgh, Pa., assignors to Bloom Engineering Company, Inc., Pittsburgh, Pa.

Filed Aug. 30, 1972, Ser. No. 284,956
Int. Cl. F23q *9/00*
U.S. Cl. 431—284 **7 Claims**

An adjustable flame burner for an industrial furnace includes a burner body having an apertured refractory baffle forming a forward wall thereof. A fuel duct extends concentri-

cally within the burner body and in registry with a fuel opening in the baffle. An annular chamber is formed between the fuel duct and the burner body and a close-off means is positioned internal of the air chamber to close off certain of the apertures so as to permit adjustment of the flame at all levels of opera-



tion. The close-off means can be either movable plugs secured within the air chamber or a partitioned air chamber having a separate air inlet feeding each resultant chamber ahd having alloy tubes connecting from one of the resultant chambers to certain of the apertures. Dual, concentric fuel ducts can be employed with the various close-off means.

3,771,945

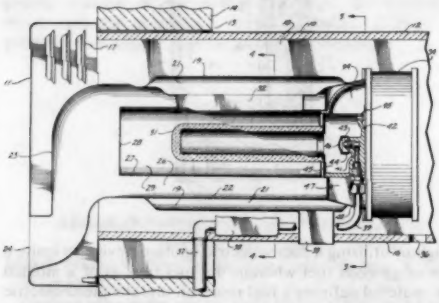
GAS BURNER HAVING A DIFFUSER FOR MIXING COMBUSTION AIR AND GAS

Walter D. Teague, Jr., Nyack, N.Y., assignor to Southern California Gas Co., Los Angeles, Calif.

Division of Ser. No. 65,374, Aug. 20, 1970, Pat. No. 3,696,802. This application Aug. 21, 1972, Ser. No. 282,287

Int. Cl. F23d *13/12*

U.S. Cl. 431—328 **3 Claims**



Gas is mixed with air with the aid of a diffuser and is drawn into a hollow core of a radiant burner. The diffuser has a plurality of spring fingers around the top of a gas outlet orifice. The fingers carry a shallow cup having a concave surface which faces the orifice and deflects gas laterally and rearwardly in a mixing chamber surrounding the diffuser. Incoming air is thoroughly mixed with the gas in the mixing chamber prior to the induction of the mixture into the hollow core. Gas is burned on the surface of the radiant burner and the products of the combustion heat air for, for example, room heating.

3,771,946

METHOD FOR CARRYING OUT ENDOTHERMIC PROCESSES IN A SHAFT FURNACE

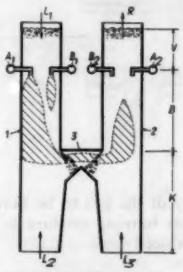
Hermann F. Hofer, Piesting, and Alois Schmid, Wien, both of Austria

Filed May 17, 1971, Ser. No. 144,152

Claims priority, application Austria, May 20, 1970, 45307018

Int. Cl. F27b *9/02*

U.S. Cl. 432—14 **6 Claims**



A process for calcining lime in a furnace or kiln having two spaced vertical shafts including each a preheating, a combustion and a cooling zone and joined together at the lower end of the combustion zone, comprising heating the material in the preheating zone, introducing a current of primary air into the top of one shaft to flow through the combustion zone into the other shaft upwardly and outwardly together with waste gas, introducing secondary air into one or both shafts in a counter flow direction from the bottom of the cooling zone, and feeding a fuel material into the combustion zone at more than one position so that a portion of the fuel material burns only with the secondary air.

3,771,947

APPARATUS AND METHOD FOR HEATING FLOWABLE MATERIAL

Ronald R. Cook, Omaha, Nebr., assignor to Charles E. Lakin, Omaha, Nebr.

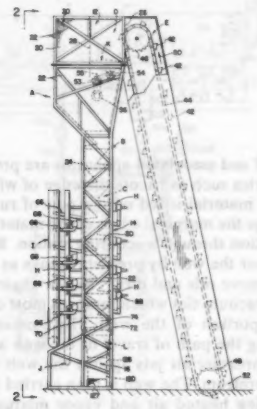
Filed Feb. 18, 1972, Ser. No. 227,406

Int. Cl. F27b *1/00*

U.S. Cl. 432—95 **70 Claims**

Apparatus for heating flowable material in a clean, efficient and quiet manner includes a hollow upright tower. Flowable material is introduced into the upper portion of the tower and falls therethrough under the influence of gravity. A plurality of vertically-spaced and reversely inclined downwardly sloping steps are positioned within the tower. Flowable material falling through the tower strikes the steps and travels in somewhat of a zig-zag path to increase the residence time of the flowable material within the tower. Gas burners are positioned for directing very high temperature and very high velocity ribbons of gas transversely of the tower against the flowable material while it is in a free fall condition between at least certain of the steps. The high temperature and high velocity gas fluidizes and heats the flowable material. High velocity is imparted to the gas by conversion of thermal energy to kinetic energy in the burners. The steps within the tower are provided by a plurality of vertically stacked non-metallic heat insulating modular elements of special construction. The

modular elements form part of a heat insulating liner and freely float relative to an outer metal skin on the tower to accommodate relative expansion and contraction between the liner and skin. A feed means in the upper portion of the tower substantially continuously feeds flowable material into the tower in a substantially continuous wide band stream of substantially uniform thickness extending substantially entirely across the entire width of the tower and steps. The burners extend upwardly from the lower portion of the tower in vertically-



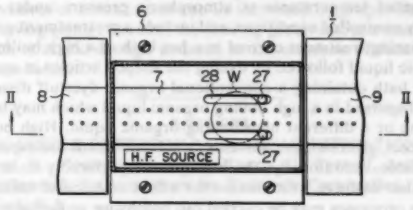
spaced relationship and terminate short of the uppermost plurality of steps in the upper portion of the tower. The uppermost plurality of steps provide a plurality of cool drop zones in which the flowable material falls without being directly contacted by hot gases from a burner. Gases from the other burners are exhausted vertically through the tower and pass through the flowable material while it is in a free fall condition in the cool drop zones. This filters any dust present in the material; lowers the temperature of the exhaust gases; and preheats the flowable material for optimum efficiency.

3,771,948

HEATING DEVICES FOR MANUFACTURING SEMICONDUCTOR ELEMENTS

Ritsuo Matsumiya, Kasukabe, Japan, assignor to Nissho Semiconductor Co. Ltd., Yono-shi, Paitama-ken, Japan

Filed Feb. 26, 1973, Ser. No. 335,839
Claims priority, application Japan, Feb. 29, 1972, 47/20963
Int. Cl. F27b 9/00, 9/14
U.S. Cl. 432—122 4 Claims



The heating device for manufacturing semiconductor elements comprises conveyor means for successively conveying a plurality of semiconductor wafers coated with films to be heated, such as photoresist films, and a heating chamber disposed in the path of travel of the conveyor means. Microwave energy is irradiated in the heating chamber to heat the films. A plurality of pins are associated with the conveyor means. Means are provided to protrude and retract the pins with respect to the conveyor means, rotate and reciprocate the pins in parallel with the direction of travel of the conveyor means for uniformly distributing the microwave energy on the semiconductor wafers.

CHEMICAL

3,771,949
PRETREATMENT AND DYEING OF SHAPED ARTICLES DERIVED FROM WHOLLY AROMATIC POLYAMIDES

Julius Hermes, Martinsville, Va., assignor to Martin Processing Company, Incorporated, Martinsville, Va.

Filed Nov. 29, 1971, Ser. No. 203,010
Int. Cl. D06p *5/04, 3/24*
U.S. Cl. 8—4 **4 Claims**

Processes are disclosed for the conversion of thermally stable shaped articles derived from wholly aromatic polyamides into level dyeing, deeper dyeing products having improved resistance to discoloration by sunlight or ultraviolet radiation. The processes involve treatment of the shaped articles at elevated temperatures at atmospheric pressure under carefully controlled conditions, and include a pretreatment or conditioning treatment carried in a hot bath of a high boiling organic liquid followed by dyeing the shaped articles in another hot bath cotaining a conventional organic dyestuff dissolved or dispersed in a high boiling organic liquid which may be the same or a different high boiling organic liquid. High boiling glycols, glycol ethers, solvents or solvent blends are especially suitable. Additionally, the hot dyebath preferably includes a further additive to minimize the effect of harmful radiation. The processes may be carried out batchwise or continuously, and may be employed for the treatment of the shaped article in the form of continuous filament yarn, staple yarn, tow, fabric, etc. Special features of the invention are the relatively short time of treatment (especially in the case of continuous operation) thus providing a commercially feasible process and the avoidance of the need for employing solid organic or inorganic pigments for coloring the thermally stable shaped articles.

3,771,950
PROCESS FOR PREPARING PERMANENT-PRESS ARTICLES

Anthony Max Schwartz, and Julian Berch, both of Washington, D.C., assignors to The Gillette Company Research Institute, Rockville, Md.

Filed May 26, 1967, Ser. No. 641,476
Int. Cl. D06m *13/14, 13/34*
U.S. Cl. 8—115.5 **11 Claims**

In the process of making permanent-press articles, treating the article with a liquid impregnating composition having at least two phases, containing liquid droplets of a water solution of thermosetting resin and catalyst dispersed in a water immiscible organic liquid which has a higher evaporation rate than water at room temperature.

3,771,951
IMPROVED PROCESS FOR WASHING POLYESTER MATERIALS

Rene P. Berni, Oradell, N.J., and Richard A. Grifo, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

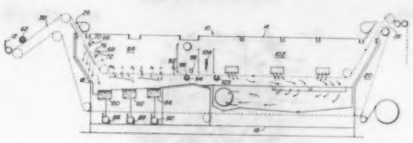
Division of Ser. No. 58,647, July 27, 1970, Pat. No. 3,689,435. This application Mar. 22, 1972, Ser. No. 237,053
Int. Cl. B08b *3/00*
U.S. Cl. 8—137 **5 Claims**

A soil, anti-redeposition agent for use in laundry applications is disclosed, which agent comprises a synergistic mixture of polyvinylpyrrolidone and polyvinyl alcohol.

3,771,952
WEB SCOURING METHOD AND APPARATUS

William J. Holm, Springfield, Vt., assignor to Riggs & Lombard, Inc., Lowell, Mass.

Filed Apr. 17, 1972, Ser. No. 244,584
Int. Cl. B05c *9/12, 9/14, 11/12*
U.S. Cl. 8—149.1 **12 Claims**

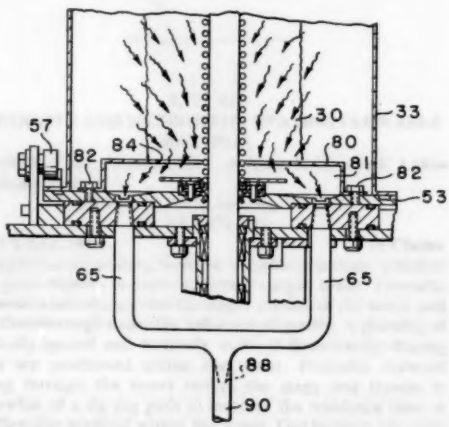


A method and associated apparatus are provided for scouring knit fabrics such as tricots the edge of which tend to curl. The web of material is fed onto a pair of running pin chains which engage the marginal edges of the material and carry it in a flat condition through a scouring station. Scouring liquid is delivered over the web by pressure sprays as well as sheets of liquid to remove oils and dirt. The pin chains then carry the web over a vacuum slot which removes most of the liquid from the center portion of the web. High pressure air jets are located along the path of travel of the web and positioned to direct high pressure air jets against the web edges to remove moisture therefrom. The web is then carried through a drying chamber using heated air and vapor mixture. Chemicals of various types can be applied with a high degree of penetration by the use of one or more suction boxes located at or after a chemical application station.

3,771,953
YARN BULKING METHOD

Paul W. Eschenbach; Jerry N. King, and Dennis L. Riddle, all of Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Sept. 16, 1971, Ser. No. 181,069
Int. Cl. D06c *1/00*
U.S. Cl. 8—149.3 **1 Claim**



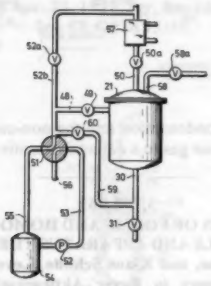
A method of bulking yarn in package form comprises subjecting yarn in a substantially tensionless package to a heated fluid. Also, apparatus for performing the method and the bulked package.

3,771,954

METHOD FOR LIQUID TREATMENT OF TEXTILE MATERIAL

Friedrich Wilhelm Johann Karrer, Stockholm, Sweden, and Alberto Pedretti, Rome, Italy, assignors to Karrer System AG, Zurich, Switzerland

Filed Aug. 2, 1972, Ser. No. 277,170
Int. Cl. D06c *1/04*; D06f *35/00*
U.S. Cl. 8—149.1 6 Claims



The bleaching or dyeing of textile material wherein the material is impregnated with treating liquor at a temperature below 100° C. and thereafter sealed within a container pressurized to the vapor pressure of the liquor at a higher temperature and then heating the liquor to the higher temperature.

3,771,955

EMULSIONS

Ida May Jones, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 30, 1971, Ser. No. 139,275
Claims priority, application Great Britain, May 5, 1970, 21,618/70
Int. Cl. D06p *1/76*
U.S. Cl. 8—173 4 Claims

Stabilised emulsions in halogenated hydrocarbon solvents of aqueous solutions or dispersions of dyestuffs or textile finishing agents, in which the emulsifying agents present comprise ethyl hydroxyethyl cellulose and one or more anionic surface-active agents. Also treatment of textile materials with such stabilised emulsions.

3,771,956

LOW-TEMPERATURE DYEING PROCESS FOR ACRYLIC FIBERS

Sadaharu Abeta, Toyonaka, Japan, assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 17, 1971, Ser. No. 209,457
Int. Cl. D06p *3/76*
U.S. Cl. 8—174 10 Claims

A low temperature dyeing procedure for acrylic fibers is disclosed which makes use of a dyebath comprising dyestuff, chlorinated hydrocarbon, nonionic surfactant, and water.

3,771,957

CATALYST ASSIST AGENTS USING LEAVING GROUP EFFECTS

Sidney L. Vail, New Orleans, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 29, 1972, Ser. No. 267,312
Int. Cl. D06m *15/56*, *15/58*
U.S. Cl. 8—186 5 Claims

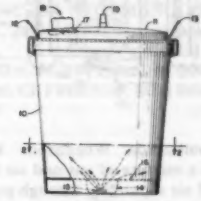
Leaving group effects provide a number of advantages in processing of cellulosic or cellulose-containing textiles. In particular, the rate of reaction of agents or compounds with cellulose can be increased in two ways. First, the reactivity of derivatives of N-methylol type agents and the reactivity of derivatives of hemiformals can be increased by proper choice of leaving group. Second, the leaving group forms a material which is acidic enough to assist in the catalysis of reactions with cellulose.

3,771,958

GASEOUS DIFFUSION PAPER DEACIDIFICATION

James E. Kusterer, Jr., and Reavis C. Sproull, both of Richmond, Va., assignors to Research Corporation, New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,217
Int. Cl. A61l *13/00*
U.S. Cl. 21—58 10 Claims



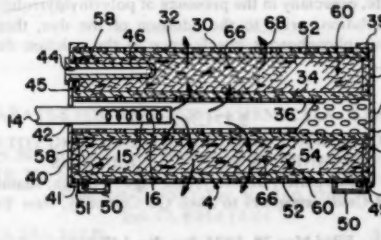
Paper, for example having a pH of about 5.0 or lower, is rendered resistant to the deterioration that is promoted by acidic conditions in paper by impregnating the paper, for example in the form of a book, with gaseous morpholine.

3,771,959

CATALYST CARTRIDGE FOR CARBON DIOXIDE REDUCTION UNIT

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Roy F. Holmes, 4240 Morrell St., San Diego, Calif.

Filed Oct. 21, 1971, Ser. No. 191,301
Int. Cl. B01j *9/04*; B01d *53/34*
U.S. Cl. 23—288 J 6 Claims



The catalyst cartridge has an inner cylindrical perforated wall and an outer cylindrical perforated wall concentric with

the inner wall and spaced radially therefrom. One end of the cartridge is closed by a circular base. The other end of the cylindrical cartridge is closed by a circular covering having a central aperture therein for admitting a mixture of hydrogen and carbon dioxide gas through a supply pipe having an electric heater therein. The outer surface of the inner wall and the inner surface of the outer wall, and the inner surfaces of the base and cover caps are covered with a batting of quartz wool which encloses within the space defined a catalyst material or iron in the form of uniformly packed steel wool.

3,771,960

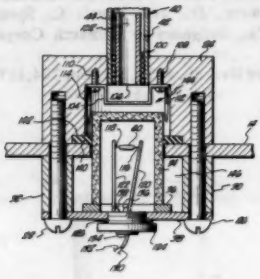
GAS ANALYZER

Young Ho Kim, Palo Alto, Calif.; John N. Pattison, Cincinnati, Ohio, and Kenneth W. Johnson, Palo Alto, Calif., assignors to AMBAC Industries Incorporated, Garden City, N.Y.

Filed July 28, 1971, Ser. No. 166,784

Int. Cl. B01f *3/02*; **G01n** *27/16, 23/22*

U.S. Cl. 23—232 E **12 Claims**



A catalytic combustion Wheatstone bridge type gas analyzer produces a mixture of gas and air by gaseous diffusion of the gas and air separately through porous walls into a reaction chamber to form the mixture, which contacts the catalytic element in the bridge circuit. The porosity of the walls is selected to permit gaseous diffusion transfer while preventing gaseous transfer into the reaction chamber by convection. The relative surface areas for diffusion of the gas sample and air are selected to provide a predetermined dilution ratio for the sample.

3,771,961

CALCIUM ASSAY AND REAGENTS THEREFOR

Jerry W. Denney, Carmel, Ind., assignor to American Monitor Corporation, Indianapolis, Ind.

Filed May 24, 1971, Ser. No. 146,536

Int. Cl. G01n *33/16*

U.S. Cl. 23—230 B **8 Claims**

A colorimetric or fluorometric assay or process for determining the calcium level in blood serum in which the phosphorus present in the serum is caused to react with molybdate, especially in the presence of polyvinylpyrrolidone, in acid solution, prior to the addition of the dye, thereby eliminating phosphorous interference in the calcium determination.

3,771,962

METHOD AND APPARATUS FOR MEASURING TOTAL ORGANICS IN AQUEOUS SOLUTIONS

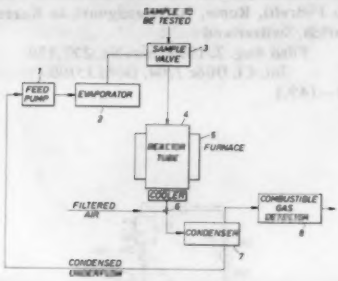
David R. Winterhalter, Berkeley, and Vigo N. Smith, Alameda, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Filed May 28, 1971, Ser. No. 147,916

Int. Cl. G01n *31/12*

U.S. Cl. 23—253 PC **3 Claims**

A method and apparatus for measuring the total organics in water wherein a sample of the water is introduced into a heated furnace to oxidize the organics to form hydrogen and carbon dioxide, the water is separated from the gaseous reaction products by condensation and the non-condensible gases conveyed by a carrier gas to a detector sensitive to hydrogen.



3,771,963

PRODUCTION OF FOAMS AND HOMOGENEOUS MATERIALS AND APPARATUS THEREFOR

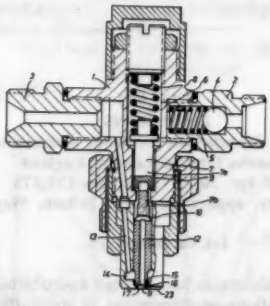
Karl Breer, Cologne, and Klaus Schulte, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 21, 1971, Ser. No. 155,087

Claims priority, application Germany, June 26, 1970, P 20 31 739.9

Int. Cl. B01f *5/06, 15/00*; **C08f** *47/00*

U.S. Cl. 23—252 R **7 Claims**



In the production of moulded articles from at least two components wherein the components at elevated pressure are released into a mixing chamber at a lower pressure and the release of pressure is utilized in the mixing of the components, and the mixed components are discharged from the mixing chamber into a mould, the two components are combined at elevated pressure and are then immediately introduced into the mixing chamber.

3,771,964

TEST COMPOSITION AND DEVICE FOR ASCORBIC ACID DETERMINATION

Marshall Lloyd Fader, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Feb. 28, 1972, Ser. No. 230,062

Int. Cl. G01n *31/22*

U.S. Cl. 23—253 TP **7 Claims**

Test composition for determining ascorbic acid in fluids and the relative concentration of ascorbic acid present therein.

The composition includes a solution containing an indicator stablized with a nitrate compound. The composition may be used as a spot test or incorporated with a carrier such as a bibulous material and dried to form a dip and read test device. An organic acid may also be included in the composition to prevent urate interference and adapt the composition for testing urine specimens.

3,771,965

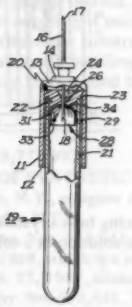
BIOLOGICAL FLUID SAMPLING APPARATUS

Ralph R. Grams, 1404 Primrose Curve, St. Paul, Minn.

Filed Apr. 23, 1971, Ser. No. 136,750

Int. Cl. G01n *33/16*

U.S. Cl. 23—259 **9 Claims**



A biological fluid sample tube assembly includes a collection tube with a closure member sealing one end of the tube. The closure is adapted for penetration by a cannula needle for delivery of a fluid sample through the cannula and closure member into the tube. A processing member, such as a scraping member, is movably supported within the tube and is movable by application of force externally of the tube in order to perform a desired processing function without opening the tube. Thus the member can scrape clotted blood or other solids, which may have coagulated while the sample tube was awaiting further processing, to a desired location in the tube out of the way of the liquid sample to be evaluated. Preferably the scraping member is designed for axial movement within the tube from a position adjacent the closure member to a position at the other end of the tube in response to the centrifugal forces applied when the tube and its sample are placed in a centrifuge for separation of solid particles, such as the red blood corpuscles in a blood sample, toward the end of the tube opposite the closure member.

3,771,966

APPARATUS FOR DIMERIZATION OF C_2 TO C_{10} OLEFINS WITH DEPOSITED CATALYST

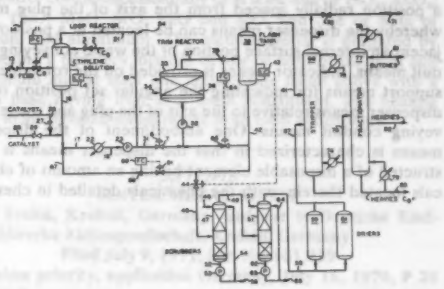
Thomas Hutson, Jr., and Cecil O. Carter, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 823,618, May 12, 1969, Pat. No. 3,631,121. This application June 28, 1971, Ser. No. 157,365

Int. Cl. C07c *3/10*; **B01j** *1/00*

U.S. Cl. 23—260 **4 Claims**

In the dimerization of C_2 to C_{10} olefins in a loop reactor, the improvement comprising running the reactor hotter than normal for a short period of time until catalyst and polymer are deposited on the walls of the loop reactor making the reactor more selective for dimerization, and then returning to the usual reaction temperatures. As a second feature, by running the effluent from the loop reactor through a fixed bed of ion exchange resin, some of the catalyst from the stream deposits on the ion exchange resin, and there acts as a second catalyst bed selective for dimerization.



3,771,967

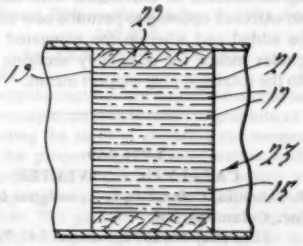
CATALYTIC REACTOR WITH MONOLITHIC ELEMENT

Hubert H. Nowak, Jackson, Mich., assignor to Tenneco Inc., Racine, Wis.

Filed Dec. 14, 1971, Ser. No. 207,794

Int. Cl. F01n *3/14*; **B01j** *9/04*

U.S. Cl. 23—288 F **15 Claims**



A catalytic converter adapter for use in the exhaust systems of internal combustion engines comprises a tubular shell having a differentially hardened fibrous lining to resiliently support, insulate, and secure a monolithic type catalyst element.

3,771,968

APPARATUS FOR RELEASING CHEMICALS CLEARING AND CLEANING WASTE PIPES

Robert M. Stalnaker, c/o Newton, Hopkins & Ormsby, Suite 1010, The Equitable Bldg., 100 Peachtree St., Atlanta, Ga.

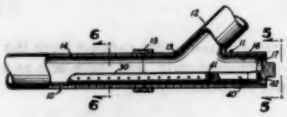
Filed July 7, 1971, Ser. No. 160,320

Int. Cl. B01d *11/01*

U.S. Cl. 23—267 D **3 Claims**

Apparatus adapted to be inserted in a waste conveying conduit means for use in clearing and cleaning obstructions therefrom. The apparatus includes a rotatable support plug

adapted to be threadably secured in coaxial relationship relative to a waste conveying conduit means. An elongated tubular shaped dispenser means having a plurality of axially and circumferentially spaced openings radially extending therethrough is secured to the rotatable support plug means at a position radially spaced from the axis of the plug means whereby the dispenser means can be located at a position adjacent an internal surface portion of the waste conveying conduit means. Indicator means is provided on the rotatable plug support means for indicating the angular set position of the dispenser means relative to the axis of the plug and waste conveying conduit means. One embodiment of the dispenser means is characterized in that the dispenser means is constructed of a disposable element having an amount of chemicals located therein, with the chemicals detailed in chemical



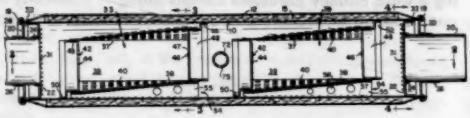
characteristics for being released in predetermined amounts in response to flushing water thereover and capable of destroying, clearing and cleaning obstructions located in a waste conveying conduit means. A chemical capable of aiding in the control of pollution could also be utilized in the dispenser. The disposable dispenser means includes means for releasably removing the dispenser means from the plug means for replacing the disposable dispenser means after the chemicals contained therein have been completely released. A second embodiment of the dispenser means is constructed of an elongated tubular element having a cavity portion capable of containing an amount of chemicals, with the dispenser including an entrance opening to permit a new supply of chemicals to be added and wherein the elongated dispenser element includes means for releasably securing the dispenser element to the rotatable plug support means.

3,771,969

CATALYTIC CONVERTER

George E. Scheitlin, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed May 10, 1971, Ser. No. 141,730
Int. Cl. F01n *3/14*; B01j *9/04*
U.S. Cl. 23—288 F **6 Claims**



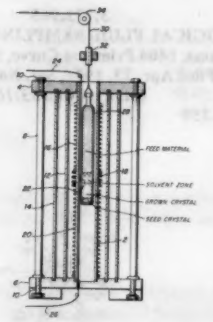
A catalytic converter for removing noxious pollutants from an exhaust gas stream having a pair of longitudinally spaced conversion chambers mounted therein between its inlet and outlet. Each of said chambers extends diametrically across the converter and each is provided with a pair of opposed faces having openings formed therein whereby the exhaust gases will pass successively through said chambers during their movement from the inlet to the outlet.

3,771,970

METHOD OF PRODUCING CADMIUM TELLURIDE CRYSTALS

Naim Hemmat, Lexington, and Fritz V. Wald, Marlboro, both of Mass., assignors to Tyco Laboratories, Inc., Waltham, Mass.

Filed Feb. 2, 1970, Ser. No. 7,834
Int. Cl. B01j *17/14*; C01g *11/00*
U.S. Cl. 23—304 **17 Claims**



Method of producing bulk crystals of cadmium telluride involving growth from solution in a selected solvent such as tellurium.

3,771,971

AGGLOMERATING WITH INDEPENDENTLY ROTATABLE SCREEN AND DRUM

Charles Edward Capes, Ottawa; Richard D. Coleman, Orleans, and William L. Thayer, Ottawa, Ontario, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Oct. 29, 1971, Ser. No. 193,660
Int. Cl. B01j *2/12*
U.S. Cl. 23—313 **5 Claims**

A ball agglomerating apparatus comprises a rotatable ball agglomerating, tumbling drum having an agglomerate ball classifying screen rotatably mounted therein and scrolled to spiral outwardly from the drum centre to adjacent the drum curved inner surface. The drum rotates at a faster speed than the screen so that agglomerate balls are formed in the drum by feeding particulate material, liquid suspendant, and an agglomerating liquid immiscible, with the suspendant into the rotating drum, the agglomerate balls are then scooped up by the screen and classified as they are conveyed inwardly along the spiral to finally emerge from a drum outlet.

3,771,972
COATED ARTICLE
Glenn R. Schaer, and William H. Safranek, both of Columbus, Ohio, assignors to Battelle Development Corporation, Columbus, Ohio
Filed Dec. 16, 1971, Ser. No. 208,653
Int. Cl. C23b *5/06, 5/08, 5/50*
U.S. Cl. 29—196.6 14 Claims

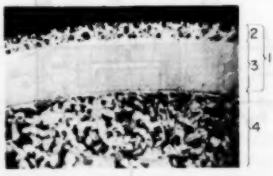
An article comprising a metallic substrate and a mechanically deformable corrosion-protective coating thereon comprising a layer on the substrate of ductile bright nickel containing less than about 0.005 percent sulfur and about 0.2 to 2 mils thick, and a layer thereon of chromium at least about 0.01 mil thick and having cracks substantially uniformly distributed therein at an average spacing of not more than about 3 mils, the coating having been maintained at about 350° to 450°F for at least about one minute. The bright nickel layer typically is electroplated from an aqueous solution comprising nickel sulfate, nickel chloride or fluroborate, boric acid, and coumarin or a derivative or analog thereof.

A layer of ductile bright copper not more than about 1 mil thick may be provided between the substrate and the layer of bright nickel, and a layer of ductile semibright nickel not more than about 2 mils thick may be provided between the copper layer and the bright nickel layer.

3,771,973
METAL PLATING OF SYNTHETIC POLYMERS
George T. Miller, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
Continuation-in-part of Ser. Nos. 614,541, Feb. 8, 1967, and Ser. No. 847,423, Aug. 4, 1969, which is a continuation-in-part of Ser. No. 683,793, Nov. 17, 1967, abandoned, which is a continuation-in-part of Ser. No. 614,541, Feb. 8, 1967. This application May 10, 1971, Ser. No. 142,053
Int. Cl. C23f *17/00*; C23b *5/60*
U.S. Cl. 29—195 22 Claims

Synthetic polymers, having a non-macroporous surface, are plated with metals by pretreating the non-macroporous polymer surface with phosphorus in an organic solvent to deposit phosphorus at the polymer surface. The treated surface is then contacted with a metal salt or metal salt complex, to form a metal-phosphorus compound. The resulting surface is then either conductive or is capable of catalyzing the reduction of a metal salt to form a conductive surface. The resulting surfaces are readily electroplated by conventional techniques.

3,771,974
SURFACE-COATED METAL MATERIAL HAVING RESISTANCE TO MOLTEN TIN
Kiyoshi Itakura, Nishinomiya, and Yutaka Ohmae, Kawanishi, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Filed Sept. 8, 1970, Ser. No. 70,066
Claims priority, application Japan, Sept. 18, 1969, 44/71126; Sept. 18, 1969, 44/71127
Int. Cl. B32b *15/18*
U.S. Cl. 29—195 M 4 Claims



A metal material having corrosion resistance against molten tin, said metal material comprising a metal base having iron as a main constituent and a surface coating alloy layer, said surface coating alloy layer composed of an iron alloy and a particulate matter dispersed in said alloy, said alloy consisting of iron and one or both of titanium and aluminium, said particulate matter consisting essentially of at least one of TiO_2, Al_2O_3, ZrO_2, CaO, MgO, SrO, BaO and SiO_2 and one or both of titanium and aluminium. The metal material is prepared by contacting a powdery mixture of one or both of titanium and aluminium and at least one metal oxide listed above with a metal base having iron as a main constituent, and heating them to an elevated temperature in an inert atmosphere.

3,771,975
SINTER METAL ALLOY
Fritz Frehn, Krefeld, Germany, assignor to Deutsche Edelstahlwerke Aktiengesellschaft, Krefeld, Germany
Filed July 9, 1971, Ser. No. 161,929
Claims priority, application Germany, July 16, 1970, P 20 35 266.5
Int. Cl. B22f *3/00*
U.S. Cl. 29—182.7 3 Claims

Very hard, corrosion-resistant low specific gravity sinter alloys comprise a major proportion of one or more carbides of titanium, chromium and vanadium and a minor proportion of an austenitic metal alloy containing 0.2 to 1.2 percent Cu, 0.2 to 1.2 percent of niobium/tantalum and/or titanium, 0.5 to 29 percent molybdenum, 0.005 to 0.1 percent boron, 10 to 66 percent nickel, and optionally carbon, chromium, aluminium, manganese, tungsten and iron.

3,771,976
METAL CARBONITRIDE-COATED ARTICLE AND METHOD OF PRODUCING SAME
Gene Felix Wakefield, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 769,356, Oct. 21, 1968, abandoned, which is a continuation-in-part of Ser. No. 699,053, Jan. 19, 1968, abandoned. This application Jan. 8, 1971, Ser. No. 105,075
Int. Cl. C23c *11/18, 11/14*
U.S. Cl. 29—194 8 Claims

Metal carbonitride coatings are deposited on the surface of an article, for example, an article made of graphite or steel, by a process including the steps of elevating the temperature of the article to the proper reaction temperature and passing over the heated article a gaseous stream which will yield hydrogen, nitrogen, carbon and the metal upon contact with the heated article. The gaseous stream can comprise, for example, hydrogen, nitrogen, titanium tetrachloride and a carbon-containing compound such as methane or chlorobenzene. Alternatively, the nitrogen can be derived from a nitrogen-containing compound, in which instance the gaseous stream can contain hydrogen, titanium tetrachloride and a compound such as diaminethylene, pyridine, or trimethylamine, for example.

3,771,977
BEARING SURFACE
Chong Tan Liu, Tonawanda, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
Filed Dec. 27, 1971, Ser. No. 212,791
Int. Cl. B32b *15/08*
U.S. Cl. 29—195 P 10 Claims

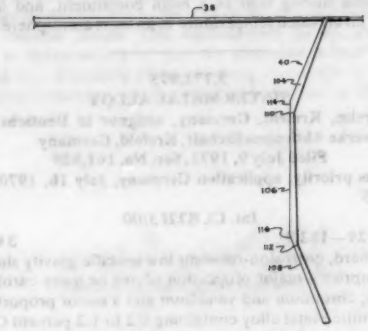
A bearing material which comprises a base, which base has a phenolic or other thermoset plastic surface, and a bearing surface, adherently deposited on said phenolic surface, of from 0.02 to 0.62 mils of at least one metal selected from nickel, copper and chromium. The metal bearing surface may be a single layer of an electrolessly applied metal, such as an electroless nickel layer, or multiple layers of electrolessly and electrolytically applied metal, having a total thickness of 0.02 to 0.62 mils.

3,771,978

TAPERED POLE AND METHOD AND APPARATUS FOR PRODUCING SAME

Ford B. Cauffiel, 4940 Homerdale Ave., Toledo, Ohio

Filed Dec. 27, 1971, Ser. No. 212,228
Int. Cl. B21c 37/18
U.S. Cl. 29—193 **5 Claims**



A tapered pole design and a method and apparatus for producing tapered poles are provided. The apparatus includes a tapered mandrel, means for rotating the mandrel, means for directing a tapered strip onto the mandrel, and means for placing the strip in tension as it is wound on the mandrel in a pseudo-helical manner. The tapered strip is preferably curved or formed in several segments attached together in end-to-end relationship at angles formed between the first strip segment and subsequent ones. Longitudinally extending edge portions of the tapered strip preferably slant downwardly to the plane of the strip prior to being wound on the mandrel. This counteracts a tendency for the edges of the strip to curl up when wound under tension. The pole can be removed from the tapered mandrel by a spinning technique or by employing a collapsible mandrel. The pole itself can be made from two separate tapered strips which are wound in opposite directions to provide a double wall tapered pole of maximum strength and stiffness.

3,771,979

LIQUID HYDROCARBON CONTAINING ALKALI METAL SALTS OF DIARYLCARBAMATES AS ANTIKNOCK AGENTS

El-Ahmadi I. Heiba, 11 Balsam Ln., and Stamoulis Stournas, 152 Nassau St., both of Princeton, N.J.

Filed Sept. 28, 1972, Ser. No. 293,218
Int. Cl. C10l 1/22
U.S. Cl. 44—71 **11 Claims**

Liquid hydrocarbon fuel compositions are provided containing antiknock quantities of alkali metal salts of diarylcarbamates.

3,771,980

ANTI-ICING GASOLINE COMPOSITION

Arthur Lee Larson, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 780,573, Dec. 2, 1968, Pat. No. 3,639,110. This application May 26, 1971, Ser. No. 147,152. The portion of the term of this patent subsequent to Feb. 1, 1989, has been disclaimed.
Int. Cl. C10l 1/26
U.S. Cl. 44—72 **12 Claims**

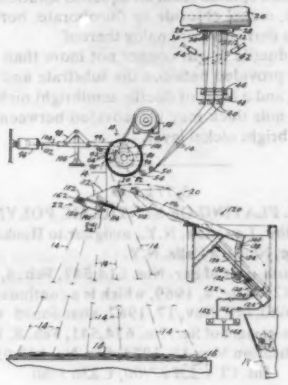
Improved anti-icing characteristics of gasoline are obtained by incorporating within the gasoline stock about 0.0001 to about 1.5 weight percent of the reaction product obtained by reacting an N-secondary-alkyl trimethylene diamine (e.g. can contain 10–20 carbon atoms in the alkyl group) and a phosphate ester obtained, e.g. by reacting preferably equal molar amounts of polyphosphoric acid and a condensation product of an alcohol (contains three to five carbon atoms) and 1–10 moles of ehtylene oxide. The reaction product preferably has a pH of about 7 to 8.

3,771,981

APPARATUS FOR SEVERING AND DEPOSITING GLASS FIBERS

James H. Sears, and Paul M. Vucish, both of Anderson, S.C., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 28, 1972, Ser. No. 284,298
Int. Cl. C03b 37/02
U.S. Cl. 65—9 **5 Claims**



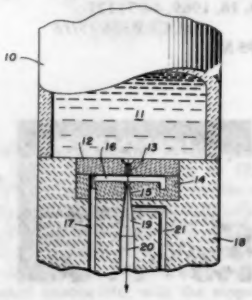
Apparatus for severing linear elements such as glass strands; the apparatus includes means providing spaced apart opposing surfaces defining a space for extension of a linear element therethrough, a movable member with a cutting edge adjacent the space and means for reciprocating the member laterally of the space to sever linear elements extended through the space across the member. The apparatus is used in a continuous glass filament forming operation together with an interim collection container.

3,771,982

ORIFICE ASSEMBLY FOR EXTRUDING AND ATTENUATING ESSENTIALLY INVISCID JETS

Emerick J. Dobo, Cary, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Sept. 5, 1972, Ser. No. 285,973
Int. Cl. C03b 37/02; D01d 11/00
U.S. Cl. 65—1 **6 Claims**



An improved orifice assembly is provided for extruding filaments from low-viscosity or essentially inviscid melts.

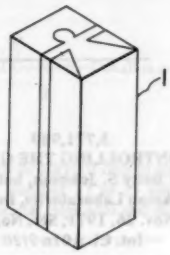
By employing an orifice having a nozzle like configuration in the "gas plate" substantial increases in attenuation rates are realized. The orifice is characterized by a convergent entry section, a throat section and a divergent exit section.

3,771,983

METHOD FOR FABRICATION OF PRECISION MINIATURE GLASS CIRCUITS

Emil R. Straka, San Jose, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed June 24, 1971, Ser. No. 156,211
Int. Cl. C03c *15/00*
U.S. Cl. 65—31 **3 Claims**



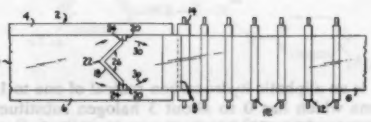
Precision miniature glass circuits, such as fluidic circuits and optical waveguide and laser circuits, are fabricated by assembling a plurality of glass members of at least two differing types of glass to form a subassembly. The subassembly is heated to fuse the glass members together. The cross sectional dimensions of the assembly may be reduced by drawing. The fused assembly is sliced to obtain a plurality of slabs, each having the two types of glass therein with one of the types of glasses defining a circuit pattern for flow of energy, such as fluid energy or optical energy, therealong. In the case of fluidic circuits, the glass type which defines the circuit pattern is etchable so that it can be removed to provide the fluid flow circuit passageways in the slab. In the case of optical waveguides and circuits, the type of glass defining the circuit pattern has a different index of refraction from the other glass members in order to form light paths or pipes. The slabs containing the circuit patterns are sandwiched between pairs of glass slabs for providing strength and/or for closing off the opposite sides of the energy flow circuit patterns.

3,771,984

METHOD OF FORMING HIGH-MELTING GLASS RIBBON

Henry M. Demarest, Jr., Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 1, 1972, Ser. No. 222,627
Int. Cl. C03b *17/00*
U.S. Cl. 65—97 **12 Claims**



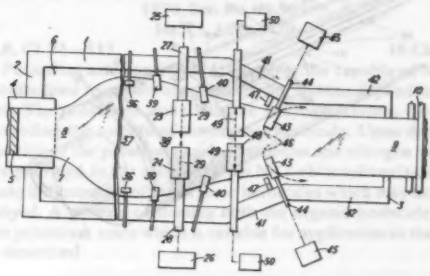
High-melting glass is formed in apparatus comprising a V-shaped diverter member that is located in the canal of a melting tank, adjacent to the exit lip, with glass passing from the exit lip to a pair of forming rolls. The V-shaped member diverts the volatile-impoverished, silica-rich and somewhat scummy surface layer of the glass toward the sides of the canal, and it consequently passes into the edge portions of the ribbon formed by passage through the forming rolls, being eliminated from the product by edge trimming. In roll-forming a high-melting glass or other glass of high volatiles content, the invention is considerably more advantageous than prior-art practices, causing smaller losses of good glass and smaller heat losses, although the equipment involved is less costly to construct and maintain than that of the prior art.

3,771,985

MANUFACTURE OF FLOAT GLASS

George Alfred Dickinson, Lancashire, England, assignor to Pilkington Brothers Limited, Liverpool, England

Filed May 26, 1971, Ser. No. 147,136
Int. Cl. C03b *18/02*
U.S. Cl. 65—99 A **10 Claims**



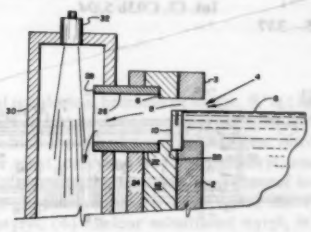
Thin float glass, e.g. in the range 3 mm to 1.5 mm, is manufactured by forming a ribbon of float glass and attenuating the ribbon by applied tractive effort. Distortion in the eventual ribbon is avoided when operating at high load by creating thermal homogeneity in the molten metal of the bath supporting the ribbon in the region of attenuation and where its viscosity is in the range $10^{5.35}$ to $10^{6.75}$ poises.

3,771,986

CONTINUOUSLY SKIMMING VISCOUS GLASS

James C. Stultz, Lower Burrell; John J. Capellman, Tarentum, and Leonard A. Knavish, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 1, 1972, Ser. No. 258,792
Int. Cl. C03b *5/20*
U.S. Cl. 65—134 **11 Claims**



A silica-rich, volatiles-deficient surface layer is removed from highly viscous glass, near a forming means (rolls or the like). There is used a weir of less-than-usual depth that contains a platinum member that provides a substantially unchanging weir depth; at the same time, Venturi means con-

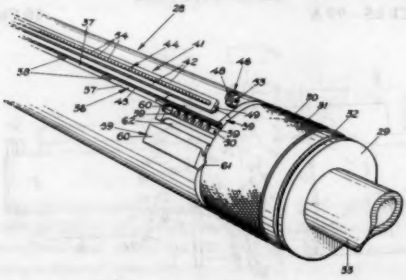
trol the amount of hot gases removed from the glass-melting furnace, to maintain or control the flow of the highly viscous glass. With the invention, it is possible to drain off the silica-rich surface of a highly viscous glass, losing only about 10 percent of the furnace throughput, rather than accepting the higher losses (about 30 percent) required in accordance with previous practices.

3,771,987

APPARATUS FOR CONVEYING A GLASS RIBBON

Curtis W. Davis, Jr., and Robert W. Fern, both of Toledo, Ohio, assignors to Libbey-Owen-Ford Company, Toledo, Ohio

Filed Apr. 5, 1971, Ser. No. 131,000
Int. Cl. C03b *15/02*
U.S. Cl. 65—172 **6 Claims**



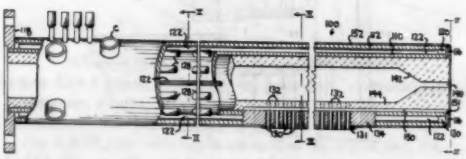
The invention pertains to an improved contoured roll for supporting a continuous sheet of glass in a highly heated, plastic state while being conveyed over the curvilinear surface of the roll supported out of contact therewith on a film formed by an aeriform fluid escaping from an elongated slot in the adjacent surface extending transversely of the sheet and terminating close to either end of the roll. The end portions of the surface of the support roll flanking the slot, which are most susceptible to wear by intermittent contact with the sheet, are replaced by shaped inserts having a surface blending with the surrounding contour. The inserts can readily be removed and replaced when worn, thereby greatly reducing the amount of maintenance and extending the useful life of the roll.

3,771,988

HIGH TEMPERATURE APPARATUS FOR CONDITIONING GLASS

Eugene W. Starr, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 14, 1972, Ser. No. 225,939
Int. Cl. C03b *5/04*
U.S. Cl. 65—337 **14 Claims**



An improved gas-impingement manifold for homogenizing a viscous liquid such as molten glass at approximately 2,400° Fahrenheit comprises an inner tube, a unitary refractory liner within the inner tube, and an outer tube concentrically mounted about the inner tube to define a cooling jacket. The refractory liner is fabricated of a material having a low coefficient of thermal expansion and contains a plurality of discharge apertures which are aligned with a plurality of water-cooled gas-impingement nozzles that are fixedly mounted between the inner and the outer tubes. Gas is supplied to the interior of the manifold, and it is discharged through the discharge apertures and the nozzles to create a visible depression in the viscous liquid. A bleed port and a subplenum slot are provided in the manifold to maintain a uniform gas temperature and pressure and to provide a self-cleaning means for unwanted solid particles.

In a preferred embodiment, the outer tube is coated with at least one layer of a ceramic material to aid in insulating the manifold and to reduce the amount of sulfate build-up.

3,771,989

METHOD OF CONTROLLING THE GROWTH OF ALGAE

John D. Pera, and Betty S. Johnson, both of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Filed Nov. 26, 1971, Ser. No. 202,581
Int. Cl. A01n *9/20*
U.S. Cl. 71—67 **5 Claims**

Poly[oxyethylene(dimethyliminio)ethylene(dimethyliminio)ethylene dichloride] prepared by the reaction of N,N,N′,N′-tetramethylethylenediamine with dichloroethyl ether in an aqueous medium is useful as an algicide.

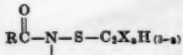
3,771,990

CONTROLLING AQUEOUS MICROORGANISMS WITH N-POLYHALOVINYLTHIO CARBOXAMIDES

Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 33,879, April 30, 1970, Pat. No. 3,679,673, which is a continuation-in-part of Ser. Nos. 810,368, March 25, 1969, abandoned, and Ser. No. 748,642, June 30, 1968, abandoned, said Ser. No. 810,368, Continuation-in-part of Ser. No. 748,642, and Ser. No. 704,555, said Ser. No. 748,642, Continuation-in-part of Ser. No. 810,377. This application May 15, 1972, Ser. No. 253,642
Int. Cl. A01n *9/12*
U.S. Cl. 71—66 **7 Claims**

N-polyhalovinylthiocarboxamides of the formula:



where R is an aliphatic hydrocarbon radical of one to 10 carbon atoms which has 0 to about 3 halogen substituents of atomic number 17 to 35, R′ is hydrogen or alkyl of one to four carbon atoms with the proviso that R and R′ may be joined to form a linear alkylene radical of three to five carbon atoms which is bound to the carbonyl and nitrogen to form a ring, X is halogen of atomic number 17 to 35 and *a* is 2 or 3. These carboxamides are fungicidal, algicidal and nematocidal.

3,771,991

CONTROLLING AQUEOUS MICROORGANISMS WITH N-POLYHALOVINYLFORMAMIDES

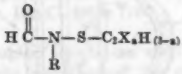
Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 33,878, is a continuation-in-part of Ser. Nos. 310,368, March 25, 1969, abandoned, and Ser. No. 748,642, June 30, 1968, abandoned, said Ser. No. 810,368, Continuation-in-part of Ser. No. 748,642, and Ser. No. 704,555, said Ser. No. 748,642, Continuation-in-part of Ser. No. 704,555, Continuation-in-part of Ser. No. 810,377. This application May 15, 1972, Ser. No. 253,643

Int. Cl. A01n 9/12

U.S. Cl. 71—67 7 Claims

N-polyhalovinylthioformamides of the formula:



wherein R is hydrogen or alkyl of one to four carbon atoms, X is halogen of atomic number 17 to 35 and *a* is 2 or 3. These formamides are fungicidal, algicidal and nematocidal.

3,771,992

2-CHLOROETHANETHIOPHOSPHONIC ACID DICHLORIDE AS PLANT GROWTH INFLUENCING AGENT

Wolfgang Hofer, Wuppertal-Vohwinkel; Reinhard Schliebs, Cologne; Robert Rudolf Schmidt, Leverkusen, and Ludwig Eue, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 23, 1970, Ser. No. 74,899

Int. Cl. A01n 9/36

U.S. Cl. 71—76 1 Claim

2-Chloroethanethiophosphonic acid dichloride possesses exceptional plant growth influencing activity, e.g., in inhibiting growth or destroying of plants, in defoliation, and in acceleration of plant growth to, e.g., speedily ripen fruit.

3,771,993

N-ARYL-N-ALKYL-N'-ARYLTHIO UREAS AS HERBICIDES

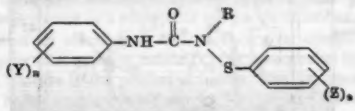
Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 41,603, is a continuation-in-part of Ser. No. 709,896, March 4, 1969, abandoned, and a continuation-in-part of Ser. No. 3,238, Jan. 15, 1970, abandoned, said Ser. No. 3,238, Continuation-in-part of Ser. No. 709,896. This application May 15, 1972, Ser. No. 253,257

Int. Cl. A01n

U.S. Cl. 71—98 18 Claims

Ureas of the formula:



where R is alkyl of one to about four carbon atoms, Y is halogen of atomic number 9 to 35, i.e., F, Cl and Br, alkyl of one to four carbon atoms, alkoxy of one to four carbon atoms or trifluoromethyl, with the proviso that when Y is alkyl or alkoxy, Y is in position 2, 4 or 6 of the nucleus, *n* is 0 or an integer in the range of 1 and 3 inclusive with the proviso that when *n* is 2 or 3 at least one Y is halogen, Z is halogen of atomic number 9 to 35 or alkyl of one to about four carbon atoms and *a* is 0, an integer in the range of 1 and 5 inclusive when Z is halogen, or 1 when Z is alkyl. These ureas are herbicidal.

3,771,994

METHOD OF CONTROLLING WEEDS WITH A COMBINATION OF AN ORGANIC HERBICIDE AND POTASSIUM AZIDE

William C. McConnell, Griffin, Ga., and Henry W. Rahn, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 645,069, is a division of Ser. No. 358,121, April 7, 1964, abandoned. This application June 25, 1970, Ser. No. 49,995

Int. Cl. A01n 9/20

U.S. Cl. 71—111 10 Claims

Potassium azide and an organic herbicide capable of being metabolized by micro-organisms in the soil are applied to the soil. The potassium azide kills the micro-organisms, thereby extending the soil life of the organic herbicide. Upon decomposition of the potassium azide, potassium and nitrogen values are provided to the soil. Isopropyl N-(3-chlorophenyl)-carbamate is illustrative of the organic herbicides which may be employed. A granule containing both the organic herbicide and the potassium azide which is suitable for application to the soil is described.

3,771,995

METHOD OF COMBATING WEEDS WITH CERTAIN OXIME ESTERS

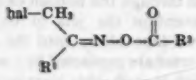
Arnold D. Gutman, San Rafael, and Don R. Baker, Pinole, both of Calif., assignors to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 746,309, July 22, 1968, Pat. No. 3,592,920. This application July 2, 1970, Ser. No. 60,960

Int. Cl. A01n 9/20

U.S. Cl. 71—121 4 Claims

Compounds having the formula



in which hal is chlorine, bromine or iodine, R^1 is (1) hydrogen, (2) lower alkyl, (3) aryl, (4) nuclear substituted derivatives thereof in which the substituents are halogen, nitro, lower alkoxy, lower alkyl, or cyano and (5) haloalkyl, and R^2 is (1) aryl, (2) nuclear substituted derivatives thereof in which the substituents are halogen, cyano, nitro, lower alkoxy, or lower alkyl, (3) styryl, (4) nuclear substituted styryl, in which the substituents are halogen, cyano, nitro, lower alkoxy or lower alkyl, (5) benzyl, (6) nuclear substituted benzyl in which said substituents are halogen, cyano, nitro, lower alkoxy or lower alkyl, (7) phenethyl, (8) nuclear substituted phenethyl in which the substituents are halogen, cyano, nitro, lower alkoxy, or lower alkyl, (9) cyclo-alkyl having 3 to 6 carbon atoms, and (10) furyl.

3,771,996

PROCESS FOR MANUFACTURING GOLD POWDER

Oliver A. Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 143,249, May 13, 1971, Pat. No. 3,717,481, which is a continuation-in-part of Ser. No. 820,636, April 30, 1969, abandoned. This application Oct. 26, 1971, Ser. No. 192,611

Int. Cl. C22b *11/04*

U.S. Cl. 75—0.5 A 6 Claims

A process for preparing a gold powder having spherical particles with a particle diameter within the range of 1-10 microns wherein the powder has a bulk density within the range of 5–9 gms./cc. by precipitating the gold from solution with selected reducing agents under controlled conditions. Metallizing compositions made from this novel gold fired to very high density prints which have good appearance and electrical properties.

3,771,997

TITANIUM OXIDES IN ELECTROSLAG PROCESSES

Peter Stanley Clark, Nechells, Birmingham, England, assignor to Foseco International Limited, Birmingham, England

Filed July 24, 1968, Ser. No. 747,073

Claims priority, application Great Britain, Aug. 2, 1967, 35,451/67

Int. Cl. C22d *7/00*; C22b *9/10*; B23k *35/24*

U.S. Cl. 75—10 R 15 Claims

The use in the electroslag remelting or welding process of a starter tablet which includes oxygen deficient titania.

3,771,998

METHOD AND CONVERTER FOR REFINING PIG IRON

Helmut Knuppel, Sulzbach-Rosenberg; Karl Brotzmann, Sulzbach-Rosenberg Huette, and Hans-Georg Fassbinder, Sulzbach-Rosenberg, all of Germany, assignors to Eisenwerk-Gesellschaft Maximilianshutte m.b.H., Sulzbach-Rosenberg Huette, Germany

Filed May 5, 1969, Ser. No. 821,802

Claims priority, application Germany, Feb. 27, 1969, P 19 09 779.1

Int. Cl. C21c *5/34*, *5/36*

U.S. Cl. 75—52 8 Claims

The invention relates to a method of refining pig iron, particularly with a high phosphorus component, in a bottom blown converter in which oxygen mixed with powdered lime is blown into the melt through the bottom of the converter. According to the invention the jets of oxygen mixed with suspended powdered lime blown into the melt through the bottom of the converter are protected by a surrounding sheath of a jacket gas which is preferably inert or slow to react with the melt.

3,771,999

SLAG-MAKING METHODS AND MATERIALS

Michael P. Fedock, Seven Hills; Robert W. Limes, Cleveland, and Robert O. Russell, Rocky River, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Dec. 3, 1970, Ser. No. 94,898

Int. Cl. C21c *5/36*; C22b *9/10*

U.S. Cl. 75—60 2 Claims

A lime product is intimately combined with a halogen compound and preferably one or more other fluxes to form a reactive flux addition which is used in steel making. The flux addition is obtained by burning a $CaCO_3$ bearing material in the presence of auxiliary fluxes or by briquetting a mixture of lime and auxiliary fluxes, including a halogen compound.

3,772,000

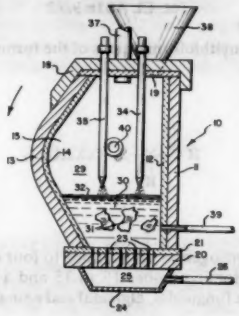
METHOD FOR CONVERTING SOLID FERROUS METAL TO STEEL

Richard W. Hyde; Herman P. Meissner, and Charles L. Kusik, all of Winchester, Mass., assignors to Columbia Gas System Service Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 739,826, June 25, 1968, abandoned. This application Nov. 23, 1971, Ser. No. 201,382

Int. Cl. C21c *5/34*; C21b *7/16*

U.S. Cl. 75—60 24 Claims



This invention relates to a method for converting solid ferrous metal to steel which comprises:

a. providing a molten pool of ferrous metal containing less than about 1 percent carbon by weight;
b. introducing a charge of solid ferrous metal containing an average of less than about 1 percent carbon by weight into said molten pool;
c. introducing into said molten pool an amount of oxygen-rich oxidant and a fuel in a ratio such that an exothermic reaction which is substantially neutral or only mildly reducing to iron oxide occurs predominantly below the surface of the molten pool releasing sufficient chemical enthalpy of reaction to melt the feed ferrous metal;
d. recarbonizing the molten ferrous metal with an amount of carbon which is sufficient to impart a carbon content to the melt to produce steel;
e. withdrawing all or a portion of the molten steel.

3,772,001

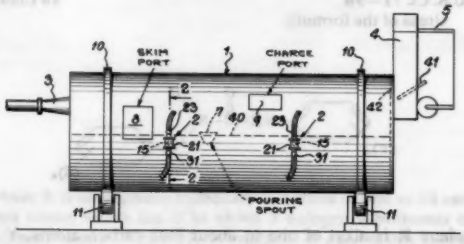
PROCESS FOR DE-SELENIZING COPPER

Harold R. Larson, North Plainfield, N.J., assignor to American Smelting and Refining Company, New York, N.Y.

Filed Dec. 14, 1971, Ser. No. 207,868

Int. Cl. C22b *9/10*

U.S. Cl. 75—93 AD 35 Claims



Molten copper containing selenium is treated with an alkali metal sulfide, added as such or formed in situ by the addition

of an alkali metal sulfate and a carbonaceous reducing agent, and a refining matte phase layer containing an alkali metal sulfide as refining agent is formed on the molten copper surface as a result of the treatment. The matte phase layer is retained on the molten copper surface for a period sufficient to enable passage of the selenium into the matte phase layer in amount sufficient to reduce the selenium content of the copper to a desired value. The selenium in the matte phase layer is thereafter separated from the molten copper, for instance by skimming off the matte phase layer.

3,772,002

PHENOLIC COUPLERS

Piero Ramello, Turin, Italy, assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 45,205, June 10, 1970, abandoned. This application Oct. 14, 1971, Ser. No. 189,136

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **12 Claims**

Phenolic color couplers which have alkyl groups bonded to at least one aromatic ring thereof, the number of carbon atoms in said alkyl groups totaling at least 12, and the phenolic nucleus of said coupler bearing an alkyl substituent in the meta position having at least two carbon atoms. The couplers exhibit unusual stability to light, heat, and moisture, and are preferably incorporated in silver halide emulsions by the solvent dispersion technique.

3,772,003

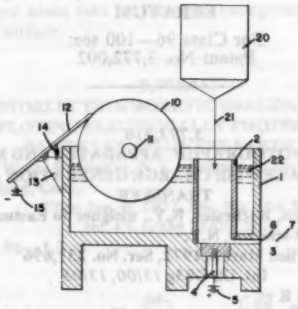
PROCESS FOR THE ELECTROLYTIC RECOVERY OF LEAD, SILVER AND ZINC FROM THEIR ORE

John Gordy, 1011 Dennis Crescent East, British Columbia, Canada

Continuation-in-part of Ser. Nos. 70,105, Sept. 8, 1970, abandoned, and Ser. No. 14,172, Feb. 25, 1970, abandoned, and Ser. No. 558,419, June 17, 1966, abandoned. This application Feb. 7, 1972, Ser. No. 224,109

Int. Cl. C22b *3/00*; **C22d** *1/12*, *1/22*

U.S. Cl. 75—101 **22 Claims**



A method of extracting any or all of zinc, silver and lead from their mixed sulfide ores, and ore concentrates. The method comprises electrolysing a slurry of the finely ground ore in the presence of a catalyst in the anode chamber or compartment of an electrolytic cell, said catalyst comprising an ion complex of a cuprous halide (CuX), in aqueous hydrogen halide. Chloride is the preferred halide. The ion complex of cuprous halide under the influence of an applied electric current initiates a reaction generating an oxidizing species which attacks and oxidizes the solids in the anode chamber or compartment. Cupric halide (CuX_2), preferably cupric chloride, is also added for the purpose of suppressing evolution of hydrogen sulfide, particularly where iron and zinc sulphides are present. An ion-selective permeable membrane is used to separate the anode compartment, containing ore slurry and reactants, from the cathode compartment.

3,772,004

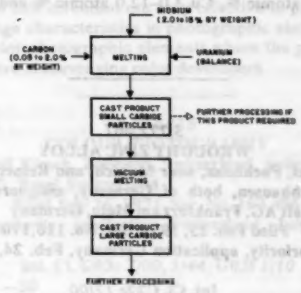
URANIUM, NIOBIUM AND CARBON ALLOY

Ross J. Jackson, Boulder, Colo., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 11, 1972, Ser. No. 279,909

Int. Cl. C22c *27/00*, *31/00*

U.S. Cl. 75—122.7 **6 Claims**



A heat-treatable alloy useable as a tool material wherein a uranium (U) base contains from about 2.0 to about 15.0 percent by weight niobium (Nb), and from about 0.05 to about 2.0 percent by weight carbon (C).

3,772,005

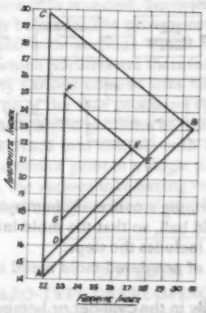
CORROSION RESISTANT ULTRA HIGH STRENGTH STAINLESS STEEL

John Joseph deBarbadillo, II, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Oct. 13, 1970, Ser. No. 80,341

Int. Cl. C22c *39/14*, *39/20*

U.S. Cl. 75—126 C **22 Claims**



Corrosion resistant stainless steels capable of developing very high tensile strengths, e.g., upwards of 350,000 psi, in the work hardened condition, the steels containing correlated amounts of chromium, molybdenum, nickel, cobalt, carbon, nitrogen, manganese and silicon. The steels are specifically directed to minimizing corrosive attack in low velocity seawater.

3,772,006

AMORPHOUS MATERIAL FOR ACTIVE ELEMENTS EXHIBITING A MEMORY EFFECT

Yoshiyuki Asahara, Kawasaki; Osamu Nagarekawa, Sayama; Makoto Tsuchiya, and Tetsuro Izumitani, both of Tokyo, all of Japan, assignors to Hoya Glass Works, Ltd., Tokyo, Japan

Filed July 10, 1972, Ser. No. 270,405

Claims priority, application Japan, July 8, 1971, 46/50504

Int. Cl. C22c *31/00*

U.S. Cl. 75—134 H **1 Claim**

An amorphous material or composition actively exhibiting a memory effect, comprising As 28.9–55.0 atomic %, Se 30.0–63.0 atomic %, Cu 3.0–12.0 atomic % and Au 2.8–6.0 atomic %.

3,772,007

WROUGHT ZINC ALLOY

Erich Pelzel, Puchheim, near Munich, and Reiner Pelzel, Munich-Lochhausen, both of Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Germany

Filed Feb. 23, 1971, Ser. No. 118,170

Claims priority, application Germany, Feb. 24, 1970, P 20 08 525.0

Int. Cl. C22c *17/00*

U.S. Cl. 75—178 A **3 Claims**

Wrought zinc alloy comprising 0.01 to 0.30% titanium, 0.01 to 2.00% manganese, 0.01 to 2.00% aluminum, balance zinc (99.9 to 99.99%).

The alloys have a high creep resistance, a high ductility and a high tensile strength.

3,772,008

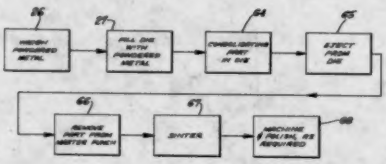
GOLF BALL MOLD PRODUCTION

Carl D. Porter, El Monte, Calif., assignor to E. Victor Freid, Monrovia, Calif.

Filed Oct. 12, 1971, Ser. No. 187,967

Int. Cl. B22f *1/00, 3/00*

U.S. Cl. 75—214 **6 Claims**



The method of forming a concavely hemispherical mold for use in molding a gold ball, so that the mold interior surface is accurately dimpled, includes the steps:

a. placing a mass of powdered mold metal in a forming die cylinder,

b. advancing axially in the cylinder or hemispherical punch, the exterior surface of which is dimpled, and against the mass of powdered metal to consolidate that metal into mold shape with the described surface dimpling, and so that the consolidated metal embraces the punch,

c. removing from the cylinder the consolidated mold with the punch embraced thereby, and

d. thereafter effecting separation of the consolidated mold and punch by thermal expansion of the mold relative to the punch.

3,772,009

METHOD FOR MANUFACTURING AN OBJECT FROM IRON-BASED ALLOY BY ISOSTATIC COMPRESSION

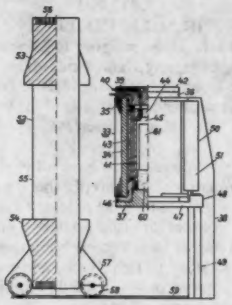
Sven-Erik Isaksson, Robertfors, Sweden, assignor to Allmann Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 18, 1972, Ser. No. 298,579

Claims priority, application Sweden, Oct. 18, 1971, 13138/71

Int. Cl. B22f *3/16*

U.S. Cl. 75—221 **3 Claims**



In a procedure in which a body formed of an iron-based alloy is manufactured from powder by isostatic compression, the powder is placed in a flexible container and subjected to isostatic pressure and heat. The isostatic hot pressing is carried out at two temperatures, at one of which the iron-based alloy is at least 25 percent in α-phase and at the other of which the iron-based alloy is in γ-phase. If the treatment at the temperature for γ-phase is carried out first, the body is cooled below the temperature level at which it is at least 25 percent in α-phase to prevent retention of the γ-phase and then raised to the temperature at which it is at least 25 percent in α-phase.

ERRATUM

For Class 96—100 see:
Patent No. 3,772,002

3,772,010

ELECTROPHOTOGRAPHIC APPARATUS AND METHOD FOR IMAGEWISE CHARGE GENERATION AND TRANSFER

Armin K. Weiss, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 3, 1972, Ser. No. 231,696

Int. Cl. G03g *13/00, 13/08*

U.S. Cl. 96—1 R **15 Claims**

An electrophotographic apparatus and method for imagewise generating electrostatic charges from a unique electrophotographic recording element and for simultaneously imagewise transferring such charges to a insulative receiving sheet to form a developable latent electrostatic image thereon. The recording element comprises a layer of radiation-responsive material, such as a photoconductor, which is disposed between a conductive backing and a fine conductive grid member, the latter being separated from the radiation-responsive layer by a small air-gap. Imagewise charge generation is accomplished by imagewise exposing the radiation-responsive layer of the recording element to actinic radiation while creating a sufficient electric field between the conductive backing of the recording element and the grid member to produce an ionic or corona discharge between the irradiated portions of the radiation-responsive layer and the grid member. Simultaneous imagewise charge transfer is accomplished by

spacedly arranging the insulative receiving sheet relative to the grid member of the recording element and creating a second electric field between the grid member and an electrode disposed behind the receiving sheet, whereby charges generated during exposure of the electrographic plate are immediately drawn to the insulative receiving sheet.

3,772,011

PRINT-OUT ELEMENTS AND METHODS USING PHOTOCONDUCTORS AND POLYGNES

Alfredo R. Guevara, Webster, and Paul M. Borsenberger, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 4, 1971, Ser. No. 195,778
Int. Cl. G03g 5/06, 5/08; G03c 5/04
U.S. Cl. 96—1 R **21 Claims**

Print-out elements and methods are described which involve a crystalline polyacetylenic compound in, or in contact with a photoconductive layer. Visible images are obtained with these layers in contact by imagewise exposure coupled with the application of an electric potential. In the absence of an applied potential, the elements described are stable under normal room-light handling conditions.

3,772,012

REVERSAL DEVELOPMENT USING POLAR LIQUID DEVELOPERS

Gary L. Whittaker, Penfield, N.Y., assignor to Zerox Corporation, Stamford, Conn.

Division of Ser. No. 104,331, Jan. 6, 1971. This application Aug. 3, 1972, Ser. No. 277,545
Int. Cl. G03g 13/10, 13/22
U.S. Cl. 96—1 LY **8 Claims**

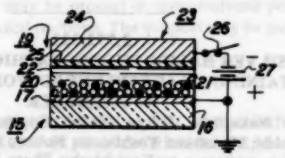
Reversal prints are obtained in an electrostatographic imaging system employing polar liquid development wherein after development the electrostatographic imaging surface is discharged in the charged undeveloped areas to reduce lateral spreading of the polar liquid developer from the developed uncharged areas into the charged background areas of the imaging surface.

3,772,013

PHOTOELECTROPHORETIC IMAGING PROCESS EMPLOYING ELECTRICALLY PHOTOSENSITIVE PARTICLES AND INERT PARTICLES

John B. Wells, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1971, Ser. No. 104,388
Int. Cl. G03g 13/00, 5/00
U.S. Cl. 96—1.3 **28 Claims**



A photoelectrophoretic imaging system wherein an imaging suspension made up of electrically photosensitive particles and inert particles dispersed in an insulating carrier liquid are exposed to a light image and a uniform electrical field. An image is formed by particle migration in image configuration. Either the electrically photosensitive particles or the inert particles migrate to form an image depending on the polarity of the field applied.

3,772,014

POLYMERS CONTAINING RESORCINOL GROUPS AND PHOTOGRAPHIC ELEMENTS CONTAINING SAME

Peter William Scullard, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 16, 1971, Ser. No. 181,261
Int. Cl. G03c 5/54, 7/00, 1/34
U.S. Cl. 96—29 D **15 Claims**

Polymers comprising units having resorcinol groups appended thereto are disclosed along with processes for preparing same. In one embodiment, the polymers are water-soluble polymers or latex polymers. In another embodiment, the polymers of this invention are very effective in providing improved image characteristics in photographic elements, especially in color photographic elements where the polymers are very effective in scavenging color developers.

3,772,015

COLOUR PHOTOGRAPHY

Hans-Rudolf Kirsch, Zofingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed July 16, 1971, Ser. No. 163,496
Claims priority, application Switzerland, July 24, 1970, 11292/70
Int. Cl. G03c 7/00, 5/44; G03f 3/10
U.S. Cl. 96—30 **4 Claims**

A process for the manufacture of screened coloured positive direct-viewing images, for rapidly recognising in the printing industry the matching of the separation negatives which the final printed product will display, is described.

3,772,016

METHOD OF PRODUCING MULTICOLOR PLANOGRAPHIC PRINTING SURFACE

Herbert R. Anderson, Jr., San Jose, Calif., and Edward A. Bartkus, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 103,862, Jan. 4, 1971, abandoned. This application Jan. 30, 1973, Ser. No. 327,884
Int. Cl. G03f 7/02
U.S. Cl. 96—31 **2 Claims**

A planographic printing surface capable of simultaneously printing more than one color is produced from light sensitive plates including at least one conductive metal layer by selectively exposing the light sensitive portion of the plate, developing the light exposed portions, removing either the exposed or nonexposed light sensitive portions, and then, as required, electrolytically coating, etching, or further exposing the portions of the plate thus revealed. Successive applications of this technique may be made. The process results in a planographic printing surface with portions which have differing surface energies and which portions are therefore susceptible to selective wetting by various colored inks having differing surface energies. Inking of the thus produced surface with inks which selectively wet specific portions of the surface, followed by bringing the surface into contact with a to-be-printed article results in a multicolor print in a single pass. In preferred printing processes, the various inks having varying surface energies are mutually nonmiscible with one another.

3,772,017

DIAZO-TYPE DEVELOPING PROCESS

Maximilian Karl Reichel, Wiesbaden-Bierbrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Jan. 25, 1971, Ser. No. 109,547
Claims priority, application Germany, Jan. 27, 1970, P 20 03 542.1
Int. Cl. G03c 5/18, 5/34
U.S. Cl. 96—49 **2 Claims**

A diazo-type developing process, for light sensitive imaging material comprising a diazonium compound, employs a

developer solution including an azo coupler compound and sodium sulfite. Contacting the exposed diazo-type material with the solution converts the image-wise disposed light-sensitive diagzonium compound to a diazo sulfonate, and subsequent heating effects development of an azo dye image while drying the sheet. The developer solution is resistant to oxidation and exhibits an extended useful life.

3,772,018

AZODICARBONAMIDES AS PHOTOGRAPHIC BLEACHING AGENTS

David W. Swan, Roydon, and George F. Duffin, Romford, both of England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 10, 1972, Ser. No. 242,757

Claims priority, application Great Britain, Apr. 14, 1971, 9,420/71

Int. Cl. G03c 5/32, 7/16

U.S. Cl. 96—60 R 42 Claims

Pollution and toxicity problems associated with conventional photographic bleach solutions may be reduced or eliminated by employing an azodicarbonamide as the bleaching agent.

3,772,019

NOVEL DEVELOPER AND PROCESS

Harold Holden, and Arnold Weichert, both of St. Johnsbury, Vt., assignors to The H & W Company Inc., St. Johnsbury, Vt.

Continuation-in-part of Ser. No. 846,215, July 30, 1969, abandoned, and a continuation-in-part of Ser. No. 28,537, April 14, 1970, abandoned, said Ser. No. 28,537, is a continuation-in-part of Ser. No. 846,215,. This application May 19, 1972, Ser. No. 255,000

Int. Cl. G03c 5/30

U.S. Cl. 96—66 HD 12 Claims

A photographic developer for high contrast, thin emulsion films comprising an aqueous alkaline solution of a 3-pyrazolidone as a primary developing agent and secondary developing agent which synergistically combines with the 3-pyrazolidone to yield a super-additive developer combination.

A process which produces continuous print tones with a high contrast negative emulsion.

A concentrated solution of the developer and a process for forming the same.

3,772,020

PERSULFATE BLEACH-FIX SOLUTION

Edward A. Smith, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 19, 1971, Ser. No. 200,614

Int. Cl. G03c 5/32

U.S. Cl. 96—60 BF 18 Claims

Bleach-fix solutions utilizing a water-soluble persulfate as the silver oxidizing agent and an alkyl amino alkyl thiol as the fixing agent are described.

3,772,021

PROCESS FOR THE DEVELOPMENT OF SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Masakazu Yoneyama; Isao Shimamura; Haruhiko Iwano, and Reiichi Ohi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

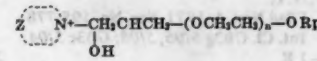
Filed Oct. 9, 1970, Ser. No. 79,627

Claims priority, application Japan, Oct. 9, 1969, 44/80988

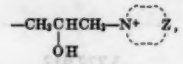
Int. Cl. G03c 5/30

U.S. Cl. 96—66.3 14 Claims

A process for the development of silver halide photographic materials which comprises developing photographic materials in the presence of a compound of the formula:



wherein R is a hydrogen atom, an alkyl group, an alkylphenyl group or $-(CH_2)_m-OR'$, R′ is a hydrogen atom, an alkyl group or



m is a positive integer of at least 2, *n* is O or a positive integer, *p* is 1 or 2, X is an anion, and Z is an organic chemical structure necessary for completing a heterocyclic ring together with N^+, is disclosed. The scope of the present invention also extends to the developed product formed, the developing compounds employed and their process of preparation.

3,772,022

DEVELOPING COMPOSITION FOR USE WITH PHOTOGRAPHIC MATERIALS FOR THE GRAPHIC ARTS

Eiichi Okutsu; Yoo Iijima, and Haruhiko Iwano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Mar. 31, 1972, Ser. No. 239,978

Claims priority, application Japan, Mar. 31, 1971, 46/19515

Int. Cl. G03c 5/30

U.S. Cl. 96—66 R 14 Claims

A developing agent for use in photographic materials for the graphic arts, containing an infectious developing agent and acetonitrile, malonitrile or derivatives thereof is disclosed. These nitrile compounds have improved storage stability and prevent air-oxidation.

3,772,023

SILVER HALIDE PHOTOGRAPHIC ELEMENT CONTAINING AN ACETYLENE SULFONYL COMPOUND AS HARDENER

Tomio Nakajima, Tokyo; Sadao Sugita, Hanno; Yukichi Kishida; Masabumi Yoshimoto; Noboru Ishida, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., and Sankyo Company Limited, both of Tokyo, Japan.

Filed June 21, 1971, Ser. No. 155,237

Claims priority, application Japan, June 20, 1970, 45/53612

Int. Cl. G03c 1/76, 1/48, 1/34, 1/30

U.S. Cl. 96—67 6 Claims

Acetylene sulfonyl compounds of the formula $R-C\equiv C-(CH_2)n-SO_2-R'$ wherein R, R′ and *n* are defined in claims are found to be useful as hardeners for the gelatin films of light-sensitive silver halide photographic materials. Synthesis and use of these compounds also are disclosed.

3,772,024

IMAGE-RECEIVING ELEMENT FOR USE IN SILVER SALT DIFFUSION TRANSFER PHOTOGRAPHIC PROCESS

Nobuo Tsuji; Takushi Miyazako; Kinji Ohkubo, and Kazunobu Kato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

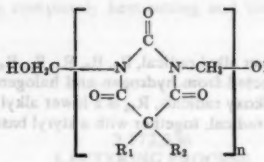
Filed Sept. 16, 1971, Ser. No. 181,223

Claims priority, application Japan, Sept. 16, 1970, 45/81111

Int. Cl. G03c *1/48*

U.S. Cl. 96—76 R 10 Claims

An image-receiving element useful for silver salt diffusion transfer photographic process, which comprises a support having coated thereon a diffusion transferred image-receiving layer primarily comprising colloidal silicon dioxide containing silver precipitating nuclei dispersed therein, said image-receiving layer being overcoated thereon with a layer containing condensation products derived from formaldehyde and barbituric acid or an alkylated barbituric acid and represented by the following formula:



wherein R_1 and R_2 may be the same or different and are each —H, $—CH_3$ or $—C_2H_5$, and *n* is a number from 1 to 10.

3,772,025

DIFFUSION TRANSFER RECEIVING SHEETS

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 675,472, Oct. 16, 1967, Pat. No. 3,671,241, which is a continuation-in-part of Ser. No. 437,799, March 8, 1965, abandoned. This application June 19, 1972, Ser. No. 264,256

Int. Cl. G03c *1/48*

U.S. Cl. 96—76 R 19 Claims

Image-receiving elements for use in forming images in silver by diffusion transfer processes are prepared by forming a dispersion of an insoluble silver precipitating agent in an alkali-impermeable polymer, e.g., cellulose acetate. At least a depthwise portion of a layer of that dispersion is hydrolyzed to an alkali-permeable polymer, e.g., cellulose. The silver precipitating agent may be present in unhydrolyzed portions as well as in hydrolyzed portions. The support may be paper or a transparent film.

3,772,026

COLORLESS PRECURSOR OF ALKYL VIOLOGEN AS FILTER AGENT IN PHOTOGRAPHIC FILM

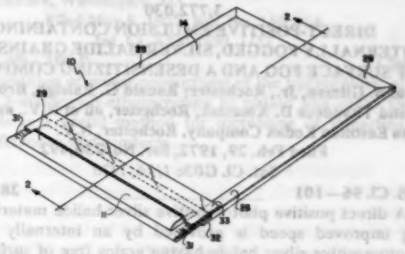
Richard B. Greenwald, Framingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 9, 1972, Ser. No. 261,261

Int. Cl. G03c *1/40*

U.S. Cl. 96—77 22 Claims

The present invention is directed to a photographic film unit adapted to provide, by diffusion transfer processing, selective dye image recordation of incident actinic radiation as a function of the point-to-point degree of photosensitive element exposure, which film unit includes a plurality of layers including a photosensitive silver halide layer having associated therewith dye image-forming material which is diffusible as a function of the point-to-point degree of silver halide layer exposure to actinic radiation; and associated with at least one of said silver halide layers an initially substantially colorless precursor of an alkyl viologen dye, i.e., a photographically inactive compound, adapted to provide an alkyl viologen in an amount effective to prevent photoexposure of the silver halide layer when the film unit is removed from the camera for processing by the filtering and/or silver halide desensitization action of the dye.



3,772,027

PHOTOSENSITIVE ELEMENT CONTAINING A PHOTOSENSITIVE CRYSTALLINE POLYACETYLENIC COMPOUND AND A PHOTOCONDUCTIVE INORGANIC METAL SALT

George W. Luckey, and Charles D. DeBoer, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 4, 1972, Ser. No. 223,773

Int. Cl. G03c *1/00*

U.S. Cl. 96—88 21 Claims

The sensitivity of radiation-sensitive polyyne compounds may be extended to longer wavelengths by the incorporation of inorganic salt sensitizers, such as titanium dioxide, zinc oxide, cadmium iodide, and cadmium sulfide.

3,772,028

SENSITIZED PHOTOSENSITIVE COMPOUNDS AND ELEMENTS

Sally S. Fico, Bergen, and Joseph W. Manthey, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 2, 1972, Ser. No. 222,996

Int. Cl. G03c *1/00*

U.S. Cl. 96—88 22 Claims

The spectral sensitivity of radiation-sensitive polyyne compounds can be extended to longer wavelengths by the use of pyrylium salts, including thiapyrylium and selenapyrylium salts.

3,772,029

LIGHT-SENSITIVE IMAGING MATERIALS

Shoichiro Hoshino, Tokyo; Keiichi Yumiki, and Toshio Taira, both of Hachioji-shi, all of Japan, assignors to Keuffel & Esser Company, Hoboken, N.J.

Filed Sept. 26, 1968, Ser. No. 763,005

Claims priority, application Japan, Sept. 28, 1967, 42/62114

Int. Cl. G03c *5/24*

U.S. Cl. 96—48 R 8 Claims

Light-sensitive imaging materials contain a photo-activator capable of yielding a free radical by action of light and a normally-oxidizable, color-developing compound which is

rendered incapable of oxidation, and thus not color-developing, by reaction with the free radical. Light exposure and treatment with an oxidizing agent renders positive image.

3,772,030

DIRECT-POSITIVE EMULSION CONTAINING INTERNALLY FOGGED, SILVER HALIDE GRAINS FREE OF SURFACE FOG AND A DESENSITIZING COMPOUND

Paul B. Gilman, Jr., Rochester; Ronald G. Raleigh, Brockport, and Thaddeus D. Koszelak, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 29, 1972, Ser. No. 230,492
Int. Cl. G03c *1/36, 1/28*
U.S. Cl. 96—101 **28 Claims**

A direct positive photosensitive silver halide material having improved speed is provided by an internally fogged photosensitive silver halide having grains free of surface fog having on the surface of the silver halide grains a desensitizing compound having a polarographic reduction potential less negative than −1.00 volts and a polarographic oxidation potential more positive than +0.76 volts. The silver halide can comprise various internally fogged silver halide materials in the absence of surface fog. Such materials can be processed to a direct positive image employing an internal developer. Such emulsions enable higher concentrations of sensitizing dyes to be employed on the photosensitive silver halide grains than are normally employed on surface sensitized silver halide emulsions.

3,772,031

SILVER HALIDE GRAINS AND PHOTOGRAPHIC EMULSIONS

Chester R. Berry, and Salvatore J. Marino, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,347
Int. Cl. G03c *1/28*
U.S. Cl. 96—108 **16 Claims**

Radiation-sensitive silver halide grains, having ions of the Sulfur Group dispersed throughout the interior of the grains in an amount less than that which, on exposure, promote internal latent image formation, exhibit increased photographic speed. Such silver halide grains are surface sensitive, and can be further surface sensitized with chemical sensitizers. These grains can be used to prepare photographic emulsions and elements. The grains themselves can be prepared using convenient precipitation techniques.

3,772,032

PHOTOGRAPHIC SILVER HALIDE EMULSIONS

Ian Pearson; Louis Butler, and Louis A. Errede, all of Harlow, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 16, 1971, Ser. No. 153,903
Claims priority, application Great Britain, June 17, 1970, 29,458/70
Int. Cl. G03c *1/04, 1/38*
U.S. Cl. 96—114 **8 Claims**

A silver halide photographic emulsion wherein silver halide grains are distributed throughout an aqueous colloid which includes a polymeric latex prepared by emulsion polymerization in the presence of at least 5 percent by weight of an emulsifying agent, which latex reduces stress-sensitivity of the emulsion.

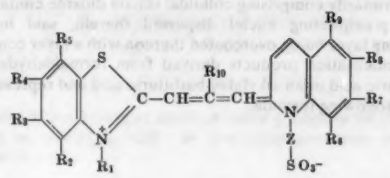
3,772,033

SUPER-SENSITIZED PHOTHOGRAPHIC SILVER HALIDE MATERIAL

Geoffrey Ernest Ficken, and Elaine Josephine Squire, both of Ilford, England, assignors to Ilford Limited, Ilford, Essex, England

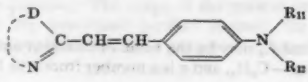
Filed Nov. 30, 1971, Ser. No. 203,367
Claims priority, application Great Britain, Dec. 1, 1970, 57,078/70
Int. Cl. G03c *1/14*
U.S. Cl. 96—126 **4 Claims**

A photographic silver halide emulsion comprising a supersensitising combination consisting of a sensitising dye of the formula



(I)

where R_1 is a lower alkyl radical, R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9 are each selected from hydrogen and halogen atoms and lower alkyl or alkoxy radicals, R_{10} is a lower alkyl radical and Z is an alkylene radical, together with a styryl base of the formula:



(II)

where D represents the atoms necessary to complete a heterocyclic ring and R_{11} and R_{12} are each lower alkyl radicals is described.

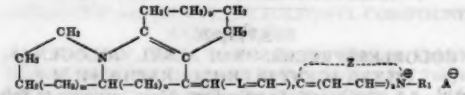
3,772,034

PHOTOGRAPHIC SENSITIZING DYES CONTAINING A BRIDGEHEAD NITROGEN

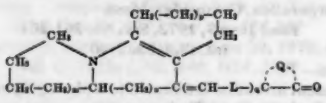
Arthur Fumia, Jr., Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 13, 1972, Ser. No. 234,389
Int. Cl. G03c *1/10*
U.S. Cl. 96—136 **8 Claims**

Cyanine and merocyanine photographic sensitizing dyes containing a bridgehead nitrogen atom are provided. These dyes include those represented by the formulas



and



wherein m, n, p and x each has a value of 0 or 1, r and q each have a value of 0, 1, 2 or 3, L is a methine group, Z represents the nonmetallic atoms necessary to complete a heterocyclic

nucleus containing 5 or 6 atoms in the heterocyclic ring, R_1 represents a lower alkyl group or an aryl group, A^- represents an anion and Q represents the nonmetallic atoms necessary to complete a heterocyclic nucleus containing 5 or 6 atoms in the heterocyclic ring.

Light sensitive silver halide emulsions containing such dyes are also provided.

3,772,035

METHOD OF MAKING A SIMULATED MEAT PRODUCT

Alan E. Carp, and Douglas D. Mohar, both of Minneapolis, Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed May 27, 1970, Ser. No. 41,104
Int. Cl. A23j *3/00*

U.S. Cl. 99—17 9 Claims

Method of preparing a simulated meat product wherein bundles of spun protein fibers are impregnated with an edible serum containing a heat coagulable binder, heat-setting the surfaces of these impregnated bundles while allowing the interior to remain capable of being set-up by heat, putting together a multiplicity of these surface heat-set bundles and then finally completely heat-setting and compressing these bundles.

3,772,036

LAUTERING PROCESS

S. Robert Stiles, Morristown, N.J., assignor to Pullman Incorporated, Chicago, Ill.

Filed Aug. 5, 1971, Ser. No. 169,304
Int. Cl. C12c *7/00*

U.S. Cl. 426—417 1 Claim

A lautering process for the production of clear and bright wort employing high energy separation techniques and including the step of removing a low density fatty solids fraction from partially clarified wort. The removal of excess quantities of soluble plant gums is also disclosed.

3,772,037

STATIC BED AGGLOMERATION

William J. Meyer, Orangeburg; Boleslaw Sienkiewicz, Pearl River, and John J. Byrwa, Yonkers, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,561
Int. Cl. A23f *1/04*

U.S. Cl. 426—453 5 Claims

A method for agglomerating particles of pulverulent food material wherein a static bed of particles is subjected to a hot humid atmosphere sufficient to fuse the static bed into a compacted fused sheet. The fused sheet may be ground to produce strong hard agglomerates of any desired particle size.

3,772,038

METHOD OF MAKING PEANUT BUTTER IN SLICED FORM

James L. Ayres, Stone Mountain; Jeffrey D. Peterson, and John R. Palmer, both of Conyers, all of Ga., assignors to Gold Kist Inc., Atlanta, Ga., by said Ayres and Peterson

Filed June 19, 1972, Ser. No. 264,377
Int. Cl. A23l *1/38*; B65b *25/08*

U.S. Cl. 99—128 8 Claims

Peanut butter in multi-layer sliced form suitable for refrigerator and freezer storage.

3,772,039

IMPARTING A POTATO FLAVOR BY ADDING THE HYDROCHLORIC ACID SALT OF 2-METHOXY-3-ETHYLPYRAZINE

Dante G. Guadagni, Moraga; Ron G. Buttery, Richmond, and Richard M. Seifert, El Cerrito, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 5, 1971, Ser. No. 140,614
Int. Cl. A23l *1/00, 1/22*

U.S. Cl. 99—100 P 1 Claim

The addition of minor proportions of the hydrochloric acid salt of 2-methoxy-3-ethylpyrazine to potato and other food products is a useful method for increasing or imparting a potato flavor to said products.

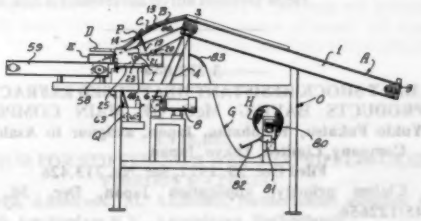
3,772,040

METHOD FOR STACKING AND SHEET INTERLEAFING FROZEN PATTIES

Ernest J. Benson, Berkeley Heights; Alonzo E. Tull, Madison, and William V. Weiveris, Union, all of N.J., assignors to Bentul Equipment Corporation, Madison, N.J.

Filed June 1, 1971, Ser. No. 148,583
Int. Cl. A22c *18/00*

U.S. Cl. 426—420 3 Claims



A method and a machine for stacking frozen patties with sheets of paper or other suitable material between them, comprise the feeding of the patties in succession in file formation in a predetermined non-vertical path and through a stack-starting ring at the end of the path where the patties fall into a vertical stack on a table which is lowered step-by-step in timed relation to the feed of the patties, the cutting from the leading end of a roll of material a sheet which is inserted between each falling patty and the next preceding patty on the stack, and pushing of the stack horizontally from the table to a predetermined point such as a conveyor.

3,772,041

VITROCERAMICS

Jean Paul Tochon, Saint-Cloud, France, assignor to Saint-Gobain Industries, Neuilly sur Seine, France

Filed May 24, 1971, Ser. No. 146,247
Claims priority, application France, May 26, 1970, 7019175
Int. Cl. C03c *3/22, 3/04*

U.S. Cl. 106—39.6 10 Claims

Translucent and opaque vitroceramics of fine grain and high quality are produced from compositions having 90 percent or more of 4–5 specific oxides with the exclusion of all but minor percentages of other ingredients. The invention describes the raw materials, the composition of the glass from which the vitroceramics are made, and the novel processes by which they are produced.

3,772,042

MOLYBDENUM SILICIDE BONDED BORON CARBIDE

Robert Kenneth Stringer, 87 Studley Rd., Heidelberg, Victoria; Neil Alexander McKinnon, 22 Stephens St., North Balwyn, Victoria, and Lloyd Stuart Williams, 206 Kooyang Rd., Toorak, Victoria, all of Australia

Filed Apr. 14, 1972, Ser. No. 244,242
Claims priority, application Australia, Apr. 14, 1971, 4588
Int. Cl. C04b *35/56, 35/58, 35/70*
U.S. Cl. 106—43 2 Claims

An abrasion resistant composition comprising between 40 and 60 percent by volume of boron carbide in particulate form, dispersed in a matrix of molybdenum disilicide.

3,772,043

CERMET PROTECTIVE COATING GLASS FRIT

Harold J. Michael, Columbus, Ohio, assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 69,914, Sept. 4, 1970, Pat. No. 3,706,579.
This application Sept. 1, 1971, Ser. No. 177,140
Int. Cl. C03c *5/00, 3/08, 7/00*
U.S. Cl. 106—48 6 Claims

A novel protective coating composition for application to metals by firing in an oxidizing environment at a temperature in the general range of 1,250° F. to 1,600° F., and essentially consisting of aluminum, a special mill addition having both refractory compound and reducible compound constituents, and a special homogeneous glass frit, obtains improved resitance of the metals to weathering and to corrosion by alkaline or acid solution attack under atmospheric conditions.

3,772,044

HEAT SHOCK RESISTANT HEAT FUSED REFRACTORY PRODUCTS HAVING MgO OF MAIN COMPONENT

Yukio Fukatsu, Yokohama, Japan, assignor to Asahi Glass Company, Limited, Tokyo, Japan

Filed Dec. 29, 1971, Ser. No. 213,426
Claims priority, application Japan, Dec. 30, 1970, 45/122656
Int. Cl. C04b *35/42*
U.S. Cl. 106—59 4 Claims

A heat shock resistant heat fused refractory product having an MgO phase which contains (1) a base structure compound mainly of melted and resolidified periclase crystals, in which needle or tabular ribbon type $CaO \cdot Cr_2O_3$ (calcium chromite) crystals are dispersed, and (2) coarse particles of MgO.

3,772,045

ADDITIVE CEMENT COMPOSITIONS AND METHOD

Walter J. Haldas, and Jesse A. Faust, both of Houston, Tex., assignors to Lone Star Cement Corporation, Houston, Tex.

Filed Apr. 5, 1971, Ser. No. 131,515
Int. Cl. C04b *7/02*
U.S. Cl. 106—90 12 Claims

An additive composition for enhancing the properties of hydraulic cement compositions, and a hydraulic cement composition of enhanced properties, particularly useful in the cementing of wells, and methods of cementing geologic formations traversed by well bores are disclosed. The additive composition comprises a water soluble lignosulfonate or lignosulfonic acid or mixtures thereof, and tartaric acid or a salt of tartaric acid or mixtures thereof, and preferably about 3 parts calcium lignosulfonate and 1 part tartaric acid, although good results are obtained with 1 to 19 parts lignosulfonate or lignosulfonic acid and 19 to 1 parts tartaric acid or a salt of tartaric acid. The hydraulic composition includes a hydraulic cement and preferably about 1–½% of the additive composition based on the weight of the cement; although , good results are obtained with from about 0.10% to about 3%, or higher, for example, for long life slurries. Especially good results are obtained when the hydraulic cement has been pretreated and aged as in our co-pending application filed Jan. 25, 1971, Ser. No. 109,606. The hydraulic cement composition has good viscosity and strength, ideal thickening times, and a reduced amount of mix water may be used thereby increasing the weight of the cement slurry.

The method of performing cementing operations in geologic formations comprises introducing a slurry of the hydraulic cement composition in a well, positioning the cement slurry at cementing depth for bonding and plugging purposes, and allowing the cement slurry to harden.

A number of examples are set forth disclosing the additive and hydraulic cement compositions, methods of making and using them.

3,772,046

TiO_2 SLURRIES HAVING A HIGH SOLIDS CONTENT

Donald Edward Knapp, Savannah, Ga., and Lindo Paul Nageroni, Bound Brook, N.J., assignors to American Chemical Company, Stamford, Conn.

Continuation-in-part of Ser. No. 55,286, July 15, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,453
Int. Cl. C09c *1/62*
U.S. Cl. 106—300 5 Claims

Pigment slurries of 70% by weight solids contents are shown to have long term stability even when exposed to typical paper making chemicals such as calcium carbonate. The aqueous slurries are formulated with pigment containing a small but effective admixed amount of polyhydric alcohol and an alkanolamine, and with water which contains a small but effective amount of a second alkanol-amine which provides a slurry pH of at least 9.

3,772,047

PREPARATION OF RED SHADE MOLYBDATE ORANGE PIGMENTS

Bernard G. Ziobrowski, Glens Falls, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed Apr. 5, 1972, Ser. No. 241,394
Int. Cl. C09c *1/20*
U.S. Cl. 106—297 5 Claims

Clear, bright and very red shades of molybdate orange pigments are described. The pigments are produced by precipitating the molybdate orange pigment particles in the presence of a starter solution containing barium and zinc cations and an anion mixture comprising molybdate ions and at least one anion which is a chromate or sulfate ion.

3,772,048

METHOD FOR REDUCING OIL ABSORPTION OF PIGMENT CONTAINING BETA-COPPER PHTHALOCYANINE AND COMPOSITE GREEN PIGMENT

William H. Rhodes, and Raymond J. Webb, Jr., both of Holland, Mich., assignors to Chemetron Corporation, Chicago, Ill.

Filed June 14, 1972, Ser. No. 262,637
Int. Cl. C08h *17/14*
U.S. Cl. 106—288 Q 19 Claims

The addition of Ferrite Yellow to a pigment containing β-copper phthalocyanine reduces the oil absorption thereof to a value lower than the weighted average of the components. A non lead-based composite green pigment suitable as a substitute for a chrome green pigment is prepared from organic yellow, β-copper phthalocyanine, and Ferrite Yellow pigments. The spectral reflectance of a paint composition comprising said composite pigment is similar to one comprising a chrome green pigment.

3,772,049

CERAMIC DECALCOMANIA BONDING AGENT

Louis A. Blanco, Tuckahoe, and Hazel W. Meade, Pleasantville, both of N.Y., assignors to Commercial Decal, Inc., Mt. Vernon, N.Y.

Continuation-in-part of Ser. No. 727,649, May 8, 1969, abandoned. This application Jan. 27, 1971, Ser. No. 110,261

Int. Cl. C08h *17/34*; C08b *27/42*, *27/36*

U.S. Cl. 106—184 9 Claims

A bonding agent for a ceramic decalcomania comprises a balanced combination of a fast acting solvent and a moderating agent. A thickening agent may also be present. The decalcomania may be applied to the article either before or after a glaze is applied. The use of such a bonding agent for adhering a decalcomania to ceramic ware permits glaze firing without the necessity of first removing the organic material in the decalcomania and fusing the pigment to the ceramic article by prior heat treatment.

3,772,050

STABILIZATION OF CELLULOSE ESTER DOPES

Gerald C. Gandy, and Gerald G. Reafler, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 863,355, Oct. 2, 1969, abandoned. This application Aug. 16, 1971, Ser. No. 172,270

Int. Cl. C08b *21/04*, *21/06*, *27/66*

U.S. Cl. 106—178 12 Claims

The use of a small amount of a salicylate dissolved in cellulose ester dopes has been found to result in the stabilization of such dopes to a significant extent against the undesired formation of amber or brownish-red insoluble globules in the dope.

3,772,051

DECORATIVE FLOORING SURFACES

Herbert Jackson Shearing, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 29, 1971, Ser. No. 167,443

Int. Cl. B44c *1/06*; B44d *1/44*

U.S. Cl. 117—9 9 Claims

A process for the manufacture of decorative flooring surfaces which comprises bonding fragments of material to the floor to be surfaced, filling in the gaps between the bonded fragments with a grouting composition containing as essential ingredients a hydraulic cement, a fine particle size filler, water and an organic polyisocyante allowing the grouting composition to harden and then grinding or otherwise treating the hardened mass to expose the fragments of material and provide a smooth surface.

3,772,052

RECORDING SHEET AND COLOR DEVELOPER THEREFOR

Shiro Kimura; Sadao Ishige, both of Kanagawa; Hajime Kato, Shizuoka; Takao Hayashi, Shizuoka; Akio Miyamoto, Shizuoka, and Hiroharu Matsukawa, Shizuoka, all of Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Oct. 26, 1971, Ser. No. 192,593

Claims priority, application Japan, Oct. 23, 1970, 45/93246; Dec. 15, 1970, 45/112039; Dec. 16, 1970, 45/112753; Dec. 16, 1970, 45/112754

Int. Cl. B41m *5/22*

U.S. Cl. 117—36.2 25 Claims

A recording sheet comprising a support having coated thereon a layer of color developer comprising a metal compound of a polymer, said polymer being a reaction product of an aromatic carboxylic acid with an aldehyde or acetylene, said color developer being capable of forming a distinct color when contacted with a color former.

3,772,053

ELECTROGRAPHIC FORMATION OF DYE IMAGES

Donald R. Eastman, and Stewart H. Merrill, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 22, 1972, Ser. No. 291,485

Int. Cl. G03g *13/00*, *13/10*, *13/14*

U.S. Cl. 117—37 LE 11 Claims

The present invention relates to an electrographic developer and method for the formation of water-soluble dye images. An electrostatic charge pattern is developed using a liquid developer having toner particles containing a polymeric material which is normally hydrophobic, but which is readily convertible to a hydrophilic form when contacted by an activating solution having a pH less 7.0. The toner particles have encapsulated therein a water-soluble dye of the desired color. The toner particle image is formed on a hydrophobic surface and is contacted with the activating solution to convert the toner particle image to hydrophilic form. The hydrophilic toner particle image is then contacted with a suitable receiving sheet whereupon the dye image migrates through the toner particle and is transferred to the receiver sheet.

3,772,054

METHOD FOR STIFFENING A WEB-SHAPED FLEECE OF FIBROUS MATERIAL

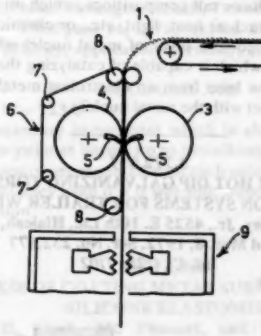
Lodewijk Anselrode, St. Anthonis, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands

Filed June 24, 1971, Ser. No. 156,205

Claims priority, application Netherlands, July 7, 1970, 7010013

Int. Cl. B41c *1/14*

U.S. Cl. 117—38 3 Claims



For the stiffening of a web-shaped fleece of fibrous material, a stiffening agent is applied to a face of the fleece by means of a cylindrical stencil having internally a squeegee. By keeping the travelling speed of the fleece at least 1 percent higher than the tangential velocity of the stencil, no fibres of the fleece will adhere to the stencil.

3,772,055

METHOD AND DEVICE FOR STRENGTHENING A NON-WOVEN MATERIAL

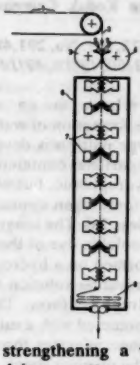
Lodewijk Anselrode, St. Anthonis, Netherlands, assignor to Stork-Amsterdam N.V., Amstelveen, Netherlands

Filed Oct. 29, 1970, Ser. No. 84,980

Claims priority, application Netherlands, Oct. 30, 1969, 6916397

Int. Cl. B44d *3/18*, *1/48*

U.S. Cl. 117—38 4 Claims



Method for strengthening a web like fleece of fibrons material by applying a pattern of dots of a stiffening agent upon the fleece by means of one or more cylindrical stencils rotating in the direction of advance of the fleece.

3,772,056

SENSITIZED SUBSTRATES FOR CHEMICAL METALLIZATION

Joseph Polichette, South Farmingdale; Edward J. Leech, Oyster Bay, and Francis J. Nuzzi, Lynbrook, all of N.Y., assignors to Photocircuits Division of Kollmorgen Corporation, Hartford, Conn.

Filed July 29, 1971, Ser. No. 167,432

Int. Cl. B44d *1/02*

U.S. Cl. 117—47 A 32 Claims

There are provided new articles of manufacture, suitable for the production of metallized bodies, such as printed circuits, dials, nameplates, metallized plastics, glass, ceramics and the like, comprising bases coated with a layer of copper, nickel, cobalt or iron salts or salt compositions, which on exposure to radiant energy, such as heat, light, etc., or chemical reducing agents is converted to a layer of metal nuclei which is non-conductive, but which is capable of catalyzing the deposition of metal onto the base from an electroless metal deposition solution in contact with the metal nuclei.

3,772,057

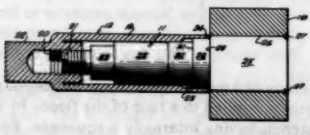
METHOD FOR HOT DIP GALVANIZING TORSION BAR SUSPENSION SYSTEMS FOR TRAILER WHEELS

William P. Whitley, Jr., 4525 E. 10th Ln., Hialeah, Fla.

Filed Mar. 8, 1972, Ser. No. 232,677

Int. Cl. C23c *1/02*

U.S. Cl. 117—48 4 Claims



A method and means of hot dip galvanizing completely assembled and machined trailer wheel suspension systems as a unit, without affecting machined wheel spindle surfaces, is described. Spindle protective sleeve caps having an interior nut operative to be screw-threaded on the wheel retainer nut threading at the outer end of a wheel spindle enables force-fitting the inner end of the sleeve cap in sealing relation against the suspension arm hub which carries the spindle, so as to completely cover and seal the spindle during unitary hot dip galvanizing of the suspension system.

3,772,058

FORMATION OF REFRACTORY COATINGS ON STEEL WITHOUT LOSS OF TEMPER OF STEEL

John A. Bloom, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 1, 1969, Ser. No. 862,937

Int. Cl. C23c *11/02*, *11/08*; C23f *17/00*

U.S. Cl. 117—62 4 Claims

Improved refractory coatings are provided in processes involving the chemical vapor phase deposition of a refractory coating upon a substrate by initially coating the substrate with a continuous adherent layer of substantially pure elemental material. For example, in a process for the vapor deposition of titanium carbonitride on a substrate such as stainless steel, by the contact of vaporous reactants containing titanium, carbon, and nitrogen, the substrate is initially plated with a continuous adherent layer of pure nickel, and the titanium carbonitride coating is applied over the nickel.

3,772,059

METHOD FOR PRODUCING MICROPOROUS SHEET MATERIAL

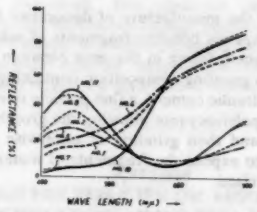
Tatsunori Shikada, Osaka, Japan, assignor to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1971, Ser. No. 130,965

Claims priority, application Japan, Apr. 13, 1970, 45/31388

Int. Cl. B44d *1/44*; B32b *5/18*; D06n *3/00*

U.S. Cl. 117—63 8 Claims



A method for producing a microporous sheet material having excellent abrasion resistance and moisture-permeability useful for artificial leathers wherein numerous bead-like linked spherical micropores are arranged contiguously at barrier intervals in the interior of the microporous layer is proposed. A coating solution of a polymer predominantly comprising polyurethane elastomer containing an inorganic salt selected from among sodium chloride, sodium sulphate, potassium chloride and potassium sulphate and a higher aliphatic carboxylic acid selected from among stearic acid, palmitic acid and myristic acid is applied to a base sheet material, then coagulated in a coagulating bath comprising water or an aqueous solution of said inorganic salt, washed and dried. Thus-obtained microporous sheet may be further subjected to buffing or grinding to produce a suede-like sheet material, if required.

3,772,060

PRE-TREATMENT OF METAL SUBSTRATES WITH COMPLEX HALOGEN-CONTAINING PHOSPHATES OF ALUMINUM

James Derek Birchall, and John Edward Cassidy, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 29, 1971, Ser. No. 203,022

Claims priority, application Great Britain, Dec. 11, 1970, 59,044/70

Int. Cl. B44d *1/14*

U.S. Cl. 117—69 9 Claims

Pre-treatment of a metal, especially aluminum or zinc, prior to painting, by means of a complex halogen-containing phosphorus or aluminum containing chemically-bound molecules of water and/or an organic hydroxy compound. The preferred complex phosphate contains ethyl alcohol molecules and has an empirical formula of $AlPC_1H_{22}C_4O_8$, and is most conveniently used in solution in methyl alcohol or ethyl alcohol.

3,772,061

CONTAINERS AND METHODS OF PREPARING

Larry G. McCoy, Columbus, and Robert E. Sharpe, Worthington, both of Ohio, assignors to Liberty Glass Company, Sapulpa, Okla.

Filed Oct. 14, 1971, Ser. No. 189,392

Int. Cl. B44d *1/14*; C03c *17/32*

U.S. Cl. 117—72 5 Claims

A glass container having improved mechanical strength produced by coating the outside surface thereof with a composition containing a copolymer of acrylonitrile and ethyl acrylate, polyacrylamide and hexamethoxymethyl-melamine and curing said coating.

3,772,062

ULTRA-VIOLET CURABLE COATING COMPOSITIONS

Eliakum Gustave Shur, Union, and Robert Dabal, Wallington, both of N.J., assignors to Inmont Corporation, New York, N.Y.

Filed Nov. 16, 1971, Ser. No. 199,374

Int. Cl. B44d *1/50*; C08f *1/20*, *3/62*

U.S. Cl. 117—93.31 12 Claims

Novel ultra-violet curable coating compositions preferably comprising the diacrylate of an epichlorohydrin-bisphenol-A epoxy resin, neopentyl glycol diacrylate, hydroxyethyl acrylate, dicyclopentenyl acrylate and a photosensitizer. These coating compositions cure rapidly under ultra-violet light, even in the presence of oxygen, and result in hard, stain-, fade-, abrasion-, and weather-resistant coatings.

3,772,063

PROCESS FOR THE PRODUCTION OF PRESSURE-SENSITIVE ADHESIVE MATERIALS

Sadaomi Fukukawa; Takefumi Shimomura; Ichiro Ijichi; Nobuharu Yoshikawa, and Tomoyuki Murakami, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed July 9, 1971, Ser. No. 161,329

Claims priority, application Japan, July 9, 1970, 45/60389

Int. Cl. B44d *1/50*; C08f *1/24*, *3/64*

U.S. Cl. 117—93.31 5 Claims

A pressure-sensitive tape is produced without the necessity of a crosslinking agent and a solvent by applying to a support a composition containing a polymerizable vinyl monomer represented by the general formula

$$CH_2=\underset{\displaystyle R}{\overset{|}{C}}COOR'$$

wherein R represents H or CH_3 and R′ represents an alkyl group having less than 10 carbon atoms and irradiating the monomer layer with ionizing high energy rays to such an extent that the monomer is provided with a pressure-sensitive adhesivity (0.1 to 100 megarads).

3,772,064

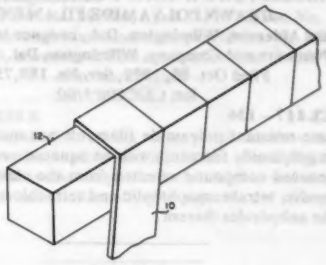
PRESSURE SENSITIVE THERMOSETTING RESINOUS ADHESIVE TAPES

Morris A. Mendelsohn, and Charles R. Ruffining, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 13, 1971, Ser. No. 162,045

Int. Cl. C09j *7/04*

U.S. Cl. 117—122 P 2 Claims



A thermosetting adhesive is made from a saturated highly aromatic polyester resin derived from a low molecular weight dihydric or trihydric polyol, a difuntional aliphatic acid or its corresponding halide or anhydride and a polyfunctional aromatic acid, or its corresponding halide or anhydride, in specified proportions. The adhesive can be applied to fibrous backing to provide a pressure sensitive tape that can be cured to a rigid thermoset state with excellent physical strength and high temperature electrical insulating properties.

3,772,065

METHOD FOR WATERPROOFING MASONRY STRUCTURES

Claus-Dietrich Seiler, Rheinfelden, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed June 14, 1971, Ser. No. 153,115

Claims priority, application Germany, June 15, 1970, P 20 29 446.6

Int. Cl. C09k *3/18*

U.S. Cl. 117—123 C 4 Claims

Novel masonry impregnant which is alcoholic solution of alyltrialkoxysilanes having up to two alkoxy groups per silicon atom. Masonry impregnated with such solutions has increased water repellancy even if it is wet with water prior to or during impregnation.

3,772,066

PROCESS OF COATING METAL SUBSTRATES WITH SILICONE ELASTOMER

William H. Clark, Mt. Pleasant, and William R. Hays, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 22, 1972, Ser. No. 255,900

Int. Cl. B44d *1/36*; C09d *3/82*

U.S. Cl. 117—132 BS 4 Claims

A composition of a vinyldiorganosiloxy endblocked polydimethylsiloxane and a mixture of an organosiloxane having five to 20 silicon atoms per molecule and an average of at least three silicon-bonded hydrogen atoms per molecule and a

modified organosiloxane having six to 21 silicon atoms per molecule, an average of at least two silicon-bonded hydrogen atoms per molecule and an average of at least one unit of $(RO)_3Si(CH_2)_x(CH_3)SiO$, $(RO)_3Si(CH_2)_x(CH_3)_2SiO_{0.5}$ and mixtures thereof where R is methyl, ethyl or

and x is 2 or 3 is curable to an elastomer which has improved unprimed adhesion to substrates, particularly metal substrates.

3,772,067

A PROCESS FOR IMPARTING FLAME RESISTANCE TO DRAWN POLYAMIDE FILAMENTS

Thomas Alderson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 15, 1971, Ser. No. 189,753

Int. Cl. C09d *1/00*

U.S. Cl. 117—136 **9 Claims**

Flame-resistant polyamide filaments are made by treating drawn polyamide filaments with an aqueous composition of a halogenated compound selected from the class consisting of chlorendic, tetrabromophthalic and tetrachlorophthalic acids and the anhydrides thereof.

3,772,068

PROCESS FOR FLAMEPROOFING FIBRE MATERIALS OF POLYESTERS AND CELLULOSE

Peter Hofmann, Uznach, and Herman Nachbur, Dornach, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

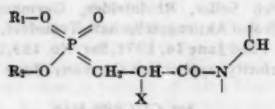
Filed Apr. 26, 1971, Ser. No. 137,628

Claims priority, application Switzerland, Apr. 27, 1970, 6250/70

Int. Cl. C09d *1/00*

U.S. Cl. 117—136 **18 Claims**

A process is provided for the flameproofing of polyester-cellulose fibre blends with aqueous preparations, which contain at least a tetrabis-(hydroxymethyl)-phosphonium salt, a phosphorus compound containing at least one radical of the formula



wherein R_1 and R_2 each denote an alkyl, alkenyl or halogenoalkyl radical with at most four carbon atoms and X denotes a methyl radical or a hydrogen atom, an aminoplast precondensate and optionally, an aliphatic or aromatic polyhalogenated phosphoric acid triester. The treated fibrous materials are dried and then subjected to a heat treatment.

3,772,069

BONDED NONWOVEN SHEET BEARING A LUBRICATING COMPOSITION OF A LIQUID POLYSILOXANE AND A LIQUID POLYOXYPROPYLENE COMPOUND

John Lewis Daniel, Hendersonville, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 17, 1971, Ser. No. 125,355

Int. Cl. B32b *27/06;* **D06m** *13/00*

U.S. Cl. 117—138.8 E **4 Claims**

A bonded nonwoven sheet of synthetic organic fibers having applied thereon a lubricating composition comprising 3–50 percent by weight of liquid polysiloxane and 50–97 percent by weight of defined liquid polyoxypropylene compound, in an amount such that the quantity of polysiloxane present on the sheet is in the range of about 0.06 to 0.8 percent by weight. This lubricated nonwoven fabric is suitable as a primary carpet backing which has high strength after tufting and performs acceptably in continuous dyeing operations.

3,772,070

APPLYING ANTISTATIC FINISH ON SYNTHETIC TEXTILES

Roy L. Luckenbach, Asheboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Apr. 5, 1971, Ser. No. 131,556

Int. Cl. B44d *1/22*

U.S. Cl. 117—138.8 VA **12 Claims**

A process for imparting antistatic effects on a textile comprising yarn of synthetic fibers which are normally susceptible to pickup of static charge. The process comprises wetting the yarn before it is bulked or dyed with a high temperature stable antistatic agent, forming the wet yarn into skeins wet heating the skeins and then dry heating the skeins until they are dried.

3,772,071

LIQUID CONTAINER CELLS

George B. Harr, Pasadena, Calif., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 787,300, Dec. 17, 1968, Pat. No. 3,616,189, which is a continuation of Ser. No. 413,763, Nov. 25, 1964, abandoned, which is a continuation of Ser. No. 357,499, April 6, 1964, abandoned. This application Mar. 9, 1970, Ser. No. 24,453

Int. Cl. B32b *27/08;* **B44d** *1/08*

U.S. Cl. 117—138.8 D **4 Claims**

Fuel cells are made with cured nitrile rubber on the inner surface and cured polyurethane on the outer surface. A nylon barrier may be provided between the two. The polyurethane layer is preferably prepared by spraying a curing agent and polyurethane precursor through a nozzle which mixes the two.

3,772,072

METHOD FOR TREATING REVERSE OSMOSIS MEMBRANES

Barry M. Brown, and Elbert L. Ray, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 14, 1971, Ser. No. 153,071

Int. Cl. C08j *1/38*

U.S. Cl. 117—144 **8 Claims**

A single phase temperature independent imbibing solution for cellulose ester or ether reverse osmosis membranes consists essentially of (a) 30–60 percent grycerin; (b) 25–55 percent water; (c) 3–10 percent nonionic first surface active agent such as a polythylene glycol ether of C11–C15 linear alcohol; and (d) 0.1–5 percent of a second surface active agent which is either anionic (eg. the dioctyl ester of sodium sulfosuccinic acid, or the sodium sulfate derivative of 7 ethyl-2 methyl -4-undecanol), or cationic (eg. C8–C18 alkyl dimethyl benzyl ammonium chloride). In the method, a cellulose ester or ether reverse osmosis membrane in a water-wet condition is immersed in the novel imbibing solution, and then is removed and dried under ambient conditions, or by exposing it to heated air.

3,772,073

PAPER COATED WITH A COMPOSITION COMPRISING PIGMENTS AND STYRENE-ACROLEIN POLYMERS

David W. Holty, Naperville, and George T. Kekish, Chicago, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Division of Ser. No. 82,065, Oct. 19, 1970, Pat. No. 3,733,286. This application Jan. 30, 1973, Ser. No. 327,980
Int. Cl. D21h *1/32*
U.S. Cl. 117—155 UA 1 Claim

Acrolein-styrene polymers have been found effective as coatings in imparting water resistance to pigmented paper. Paper is coated with a dried residue of a composition comprising water, clay, water soluble materials such as polyvinyl alcohol, hydrolyzed polyvinyl acetate, methyl cellulose, and starch; and a polymer formed by the polymerization of by weight: A. from 5 to 60 percent acrolein, B. from 40 to 95 percent styrene, C. from 0 to 40 percent acrylonitrile and D. from 0 to 2 percent acrylic acid.

3,772,074

PROCESS FOR PROTECTING A SUBSTRATE WITH AN ARYLSULFONAMIDOTHIADIAZOLE OR OXADIAZOLE INTUMESCENT AGENT

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,381
Int. Cl. C09d *5/18*; C09k *3/28*
U.S. Cl. 117—136 8 Claims

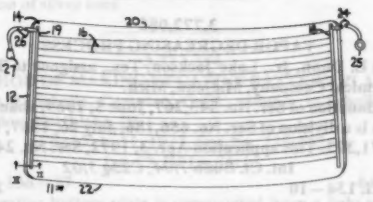
Intumescent compositions of the invention comprise certain arylsulfonamidothiadiazoles and oxadiazoles, such as 2-sulfanilamido-1,3,4-thiadiazole, 3-sulfanilamido-1,2,4-oxadiazole and derivatives thereof. The intumescent agents may be employed in conjunction with additives conventionally used in intumescent compositions. For use in protecting substrates from heat and fire, the intumescent compositions may be applied to the substrates in any suitable manner, such as by electrodeposition, spraying onto an adhesive substrate, or application of a coating composition comprising the intumescent agent.

3,772,075

APPLYING ELECTROCONDUCTIVE HEATING CIRCUITS TO GLASS

Milton S. Tarnopol, Brackenridge, and Thomas P. Snyder, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 838,163, July 1, 1967, Pat. No. 3,671,311, which is a continuation-in-part of Ser. No. 737,907, June 18, 1968, abandoned, and a continuation-in-part of Ser. No. 826,433, May 21, 1969, abandoned. This application July 20, 1971, Ser. No. 164,264
Int. Cl. H05b *33/23*; B44d *1/18*
U.S. Cl. 117—211 8 Claims



Applying a decorative coating or design of electroconductive material to a glass base. When the base is transparent, the resulting article is useful as a readily heated window from which fog and ice can be readily removed on heating. A frit composition having an appropriate coefficient of expansion, an appropriate maturing temperature, and which matures into a rough, porous coating, is applied to a glass sheet surface in the cirucit pattern desired, the sheet is heated and then cooled rapidly to produce a tempered glass sheet having a rough, porous frit coating conforming to the pattern desired for the electroconductive heating circuit, and a conductive metal coating is selectively deposited on the rough, porous frit by electroless plating. The frit may be sensitized by incorporating a minor amount of a sensitizing metal therein or by applying a sensitizing composition.

3,772,076

REACTION PRODUCTS OF EPIHALOHYDRIN AND POLYMERS OF DIALLYLAMINE AND THEIR USE IN PAPER

Gerald I. Keim, West Grove, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 30,986, April 22, 1970, Pat. No. 3,700,623, which is a continuation-in-part of Ser. No. 5,956, Jan. 26, 1970, abandoned. This application Mar. 14, 1972, Ser. No. 234,669
Int. Cl. D21h *1/38*
U.S. Cl. 117—155 R 14 Claims

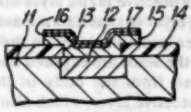
Water-soluble, alkaline curing resins which are the reaction products of an epihalohydrin and a polymer of a diallylamine are disclosed. The resins are particularly useful as wet strength agents for paper and additionally give superior dry strength to paper.

3,772,077

SEMICONDUCTOR DEVICES

Vincent Magee, Stockport, England, assignor to Ferranti, Limited, Hollinwood, England

Filed Apr. 6, 1971, Ser. No. 131,742
Int. Cl. H01l *7/34*
U.S. Cl. 117—212 13 Claims



Aluminum of a contact for a semiconductor device is rendered solderable, or a region of the aluminum selectively is rendered solderable, by depositing from a solution of zinc oxide and a hydroxide of an alkali metal a first zinc layer, which is removed, and a second zinc layer initially having an activated surface, and then depositing a nickel layer on the activated zinc surface by reducing an acid solution of a nickel salt.

3,772,078

PROCESS FOR THE FORMATION OF REAL IMAGES AND PRODUCTS PRODUCED THEREBY

Joseph Polichette, Farmingdale, and Edward J. Leech, Oyster Bay, both of N.Y., assignors to Photocircuits Division of Kollmorgen Corporation, Hartford, Conn.

Filed July 29, 1971, Ser. No. 167,435
Int. Cl. B44d *1/02*
U.S. Cl. 116—212 28 Claims

Non-conductive real images are formed on substrates by depositing reducible metal salt compositions thereon and exposing the coated substrates to radiant energy or a chemical reducing agent to reduce the metal salt to metallic nuclei and to produce a real image of metal, which is made clearer and

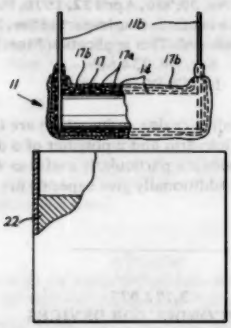
built up by electroless metal deposition. The metal salt composition can either be selectively deposited and then exposed, or uniformly deposited and then selectively exposed, to produce the real image.

3,772,079

METHOD OF ENCAPSULATING AN ELECTRICAL DEVICE IN INSULATING AND METAL MATERIALS

Theodore John Louzon, Bolingbrook, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 18, 1972, Ser. No. 289,810
Int. Cl. C23b *5/50*
U.S. Cl. 117—217 **4 Claims**



An electrical device having a pair of projecting leads, such as a capacitor or a capacitor assembly, is encapsulated by forming an inner insulating layer about a body of the device and sections of the leads adjacent the body. A moisture-proof and/or other type protective metal layer then is formed about the inner insulating layer so that it terminates at points short of the ends of the inner insulating layer on the leads, whereby insulated portions of the leads are exposed and the metal layer is electrically insulated from the body of the device and the leads. An outer protective layer, which also may be of insulating material, then is formed about the metal layer and the exposed insulated portions of the leads to entrap the metal layer within the inner and outer layers. The forming of each layer preferably is accomplished by dipping, with the metal layer being formed by dipping in a semi-molten solder composition having a relatively low melting point. Any voids in the solder composition layer then may be sealed by subsequently dipping in a molten metal solution having a melting point on the order of or less than that of the solder composition.

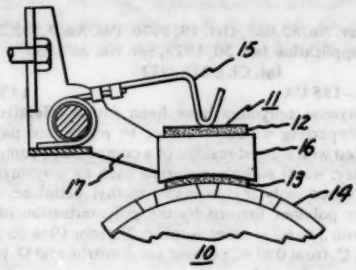
3,772,080

METHOD OF TREATING A CARBON CURRENT COLLECTION BRUSH AND BRUSH RESULTING THEREFROM

Douglas W. McKee, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 10, 1972, Ser. No. 216,417
Int. Cl. B44d *1/20, 1/06*
U.S. Cl. 117—228 **6 Claims**

A method of treating a carbon current collection brush for increased high temperature life which comprises contacting at least one surface of the brush with a solution of phosphorus oxychloride and baking the brush at a temperature from 200°C to 700°C thereby reducing the amount of phosphorus oxychloride to 1 to 4 weight percent of the brush weight. A modified method includes the above method steps but includes a pretreatment step in a mild aqueous oxidant, such as,



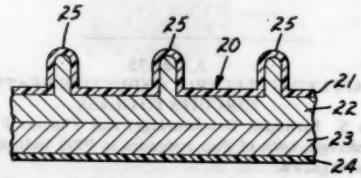
a hypochlorite solution. A carbon current collection brush has a carbon body and the body contains from about 0.1 to 5 weight percent of phosphorus oxychloride.

3,772,081

EMBOSSABLE MAGNETIC COMPOSITE FILM

Victor R. Franer, Roseville Village, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed July 19, 1971, Ser. No. 163,915
Int. Cl. H01f *10/00*
U.S. Cl. 117—239 **4 Claims**



A composite film having a flexible heat-resistant base layer, a heat softenable pressure formable adherent intermediate layer, and a conformable upper layer of a magnetic powder oxide dispersed in a non-magnetic binder. The film can be permanently embossed in its upper surface upon pressure contact with a suitable heated die to provide thereon a guide pattern such as a spiral groove, and is thereafter useful as a sound disc.

3,772,082

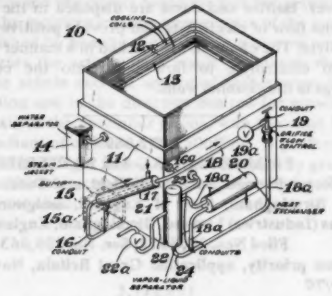
VAPOR DEGREASING PROCESS

James L. Dunn, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 843,267, June 5, 1969, abandoned, which is a division of Ser. No. 656,186, July 26, 1967, Pat. No. 3,471,372. This application Apr. 3, 1972, Ser. No. 240,487
Int. Cl. B08b *7/04;* **C23g** *5/02*
U.S. Cl. 134—10 **2 Claims**

A novel method and apparatus for degreasing metals. The method comprises introducing the soiled metal into hot solvent or vapors of a solvent, separating the solids, transporting and vaporizing a portion of the solvent and returning the vapors and hot solvent to the cleaning zone. The improved apparatus has means for removing the particulate soil from the

cleaning zone, means for generating hot solvent and vapors independent of the cleaning zone but integral with the apparatus, a means for removing oils, greases, and the like from the solvent and means for returning the solvent in a clean condition to the cleaning zone.

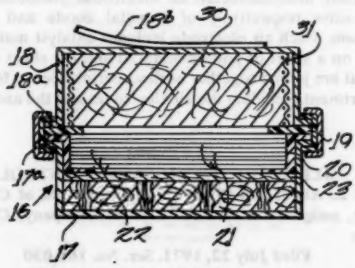


3,772,083

BATTERY CELL CONSTRUCTION

Ralph T. Mead, Kenmore, N.Y., assignor to The Wurlitzer Company, Chicago, Ill.

Filed May 1, 1972, Ser. No. 248,975
Int. Cl. H01m 43/00
U.S. Cl. 136—20 12 Claims



A battery cell construction is disclosed which has a cathode structure formed of a compound containing either silver or silver oxide and may include mercury oxide. An anode is formed of a compound containing cadmium and nickel. The nickel can be a sheet or screen formed into a spiral or fibers pressed into a pellet with the cadmium. A separator containing electrolyte material is positioned between the cathode and anode compounds. The separator includes alternate layers of ion exchange membranes of two types to provide minimum migration of silver ions.

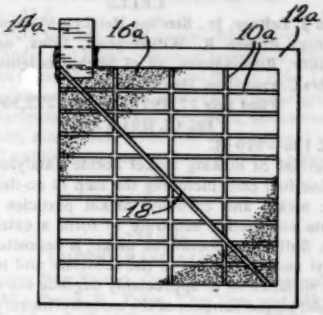
3,772,084

METHOD OF MAKING NEGATIVE BATTERY PLATES

William R. Scholle, Compton, Calif., assignor to Scholle Corporation, Northlake, Ill.

Filed Feb. 11, 1972, Ser. No. 225,405
Int. Cl. H01m 35/18
U.S. Cl. 136—27 4 Claims

A negative battery plate is constructed from a light weight, non-conductive grid by providing the grid with an initial minimal degree of conductivity and then pasting the grid with relatively non-conductive metal oxide battery paste. The minimal conductivity of the grid is utilized to initiate the conversion of the metal oxide paste to the elemental metal by electrolysis in a suitable electrolyte. The grid may contain only a single conductive lug in contact with the paste or may additionally contain one or more wires connected to the lug and passing through the interior of the grid. Alternatively, a thin coating of the elemental metal may be deposited on the grid before application of the paste. In accordance with another embodiment, an inert grid filled with oxide paste may be converted to metal by pressing a separable conductive member against the grid and battery paste during electrolysis. The minimal conductivity of the freshly prepared plate is sufficient to initiate the electrolysis, and the reaction rate accelerates as the conversion to metal proceeds, due to the progressively increasing conductivity of the plate.



3,772,085

METHOD AND APPARATUS FOR IMPROVING EFFICIENCY OF HIGH ENERGY DENSITY BATTERIES OF METAL-METAL HALIDE-HALOGEN TYPE BY BOUNDARY LAYER

Harry K. Bjorkman, Birmingham, Mich., assignor to Occidental Energy Development Company, Madison Heights, Mich.

Filed Nov. 18, 1971, Ser. No. 199,911
Int. Cl. H01m 31/00, 29/02
U.S. Cl. 136—86 A 10 Claims

Efficiencies of high energy density batteries having metal and halogen electrodes and aqueous metal halide electrolyte are improved by creating a boundary layer of electrolyte low in halogen content adjacent to the metal electrode. Such boundary layer or stagnant electrolyte prevents contact of the metal electrode with halogen from a first flow of electrolyte containing dissolved halogen which passes through the base of the halogen electrode. When the cell is vertical, best formation of the boundary layer is obtained when the second flow of electrolyte enters the bottom of the cell and is directed upwardly and toward the halogen electrode with a horizontal velocity component equal to that of the first electrolyte flow entering the reaction zone.

In preferred embodiments of the invention the cell comprises bipolar electrodes of zinc and a porous carbon base for the halogen, the halogen is chlorine and the electrolyte is aqueous zinc chloride.

3,772,086

METHOD OF MAKING ANODES FOR HYDRAZINE FUEL CELLS

Edward J. Zeltner, Jr., Sterling Heights; Marion E. Wheatley, Warren; Romeo R. Witherspoon, Utica, and Stuart G. Meibuhr, Birmingham, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 17, 1972, Ser. No. 272,309
Int. Cl. H01m *27/04*
U.S. Cl. 136—120 FC **4 Claims**

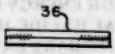
A method of making nickel boride catalyzed anodes for hydrazine fuel cells including the step of co-depositing electrolytic nickel and carbonyl nickel particles onto an appropriate conductive substrate to form a catalyst-receiving surface. Sufficient electtolytic nickel is deposited to tack the carbonyl nickel particles to the substrate and to themselves, yet not so much as to appreciably degrade the characteristic rough and jagged surfaces of the carbonyl nickel particles.

3,772,087

DEVICE FOR LIQUID FILLING OF VESSELS

Paul R. Schmechtig, Nol, Sweden, assignor to Aktiebolaget Tudor, Stockholm, Sweden

Filed Nov. 8, 1971, Ser. No. 196,409
Claims priority, application Sweden, Nov. 10, 1970, 15133/70
Int. Cl. H01m *1/02, 7/00*
U.S. Cl. 136—162 **4 Claims**



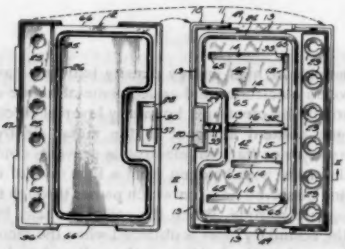
A device for simultaneously filling a plurality of vessels such as battery cells from a single location with the amount of liquid added to each vessel being in accordance with the requirement of the vessel without causing the vessel to overflow. Means are provided to limit the upper liquid level to a position below the top of the vessel and to allow the vessel to be vented to the ambient atmosphere at all times except during filling.

3,772,088

CLOSURE ASSEMBLY FOR STORAGE BATTERY

Roy Erving Hennen, Maquon, and Vincent Michael Halsall, Bayside, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Mar. 20, 1972, Ser. No. 236,351
Int. Cl. H01m *1/02*
U.S. Cl. 136—170 **10 Claims**



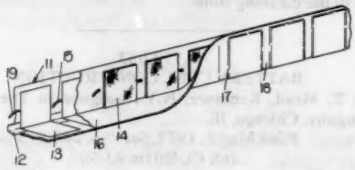
A closure assembly for a storage battery which can be completely or partially sealed with the battery casing and which has a portion integrally hinged to afford access to the cell vent openings. A manifold system is provided to direct gases from the cells to a common channel and through a porous ceramic diffuser before being vented to the outside of the cover. Baffles and dams are disposed in the channels to block the flow of electrolyte and provide positive retention of electrolyte. The channels are pitched in a manner to cause any escaped electrolyte to flow back into the cells through openings in the channel walls.

3,772,089

PRIMARY METAL-AIR BATTERIES

Derek Roger Bennett, Sutton Coldfield, and Gordon John Shotton, Birmingham, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 18, 1971, Ser. No. 200,063
Claims priority, application Great Britain, Nov. 21, 1970, 55,519/70
Int. Cl. H01m *31/00*
U.S. Cl. 136—175 **2 Claims**



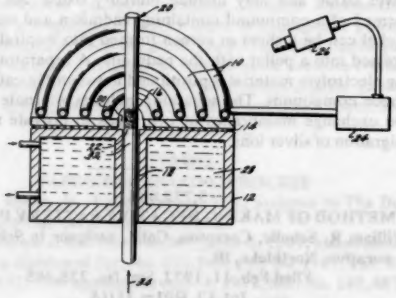
A cell for a primary metal-air battery comprises a pair of electrically interconnected air electrodes positioned on opposite sides respectively of a metal anode and insulated therefrom. Each air electrode includes catalyst material supported on a sheet of porous material and the sheet of porous material are joined together at their peripheries to form a cell compartment including the air electrodes and the anode.

3,772,090

ALLOY MICROSTRUCTURE CONTROL

Robert E. Allen, and Clyde D. Calhoun, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed July 22, 1971, Ser. No. 165,030
Int. Cl. C22f *1/10, 1/18;* C21d *7/00*
U.S. Cl. 148—11.5 F **6 Claims**



A columnar grain structure and improved high temperature, high mechanical strength properties are provided in a metal article by solid state method. First the article is formed in a manner which places the metal microstructure in a condition of dislocation density which results in the metal microstruc-

ture undergoing relatively rapid transformation to relatively large grains when heated in the range of about 50 to less than 100 percent of the metal incipient melting temperature in degrees Rankine. Then the article so preconditioned is progressively and selectively heated in that temperature range but below the incipient melting temperature of the metal. This is accomplished by heating the article in a narrow zone. Such zone traverses the article, as a result of relative movement between the article and the source of heat energy, from the cooler portion and in the direction desired for growth of the principle axis of the columnar grains, with the zone having a thermal gradient of at least about 500°F/in. A preferred form of a processed wrought article is characterized by grains of at least about 2000 microns in diameter and a length to diameter ratio of at least about 10.

3,772,091

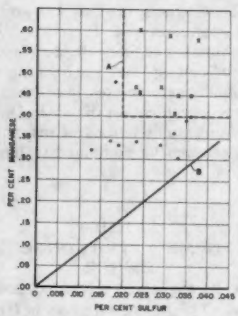
VERY THIN STEEL SHEET AND METHOD OF PRODUCING SAME

Edward H. Mayer; Frederick B. Schunk, and Hilton N. Rahn, all of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 27, 1969, Ser. No. 853,367

Int. Cl. C21d 7/02, 9/46; C23c 1/04

U.S. Cl. 148—12 **11 Claims**



A full-hard killed steel sheet of a maximum gauge of 0.0140 inch having a corrosion-resistant coating thereon, the steel having a minimum yield strength of 100,000 psi. and sufficient formability to be fabricated into can ends and double seamed onto can bodies. The steel is given a single cold reduction of 65 to 95 percent and coated in its full-hard condition.

3,772,092

COPPER BASE ALLOYS

Stanley Shapiro, New Haven, Conn.; Alan J. Goldman, Silver Springs, Md.; Derek E. Tyler, Cheshire, and Richard D. Lanam, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 5, 1971, Ser. No. 196,002

Int. Cl. C22c 9/04; C22f 1/08

U.S. Cl. 148—32.5 **8 Claims**

The disclosure teaches novel copper base alloys having improved toughness and stress corrosion resistance. The copper alloys contain from 12.5 to 30 percent nickel, from 12.5 to 30 percent manganese, a material selected from the group consisting of aluminum from 0.01 to 5 percent, boron from 0.001 to 0.1 percent, magnesium from 0.01 to 5 percent and mixtures thereof and zinc from 0.1 to 3.5 percent.

3,772,093

COPPER BASE ALLOYS

Stanley Shapiro, New Haven, Conn.; Alan J. Goldman, Silver Spring, Md.; Derek E. Tyler, Cheshire, and Richard D. Lanam, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 5, 1971, Ser. No. 196,004

Int. Cl. C22c 9/02, 9/06; C22f 1/08

U.S. Cl. 148—32.5 **8 Claims**

The disclosure teaches novel copper base alloys having improved toughness and stress corrosion resistance. The copper alloys contain from 12.5 to 30 percent nickel, from 12.5 to 30 percent manganese, a material selected from the group consisting of aluminum from 0.01 to 5 percent, boron from 0.001 to 0.1 percent, magnesium from 0.01 to 5 percent and mixtures thereof and tin in an amount from 0.01 to 2 percent.

3,772,094

COPPER BASE ALLOYS

Stanley Shapiro, New Haven, Conn.; Alan J. Goldman, Silver Spring, Md.; Derek E. Tyler, Cheshire, and Richard D. Lanam, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 5, 1971, Ser. No. 196,003

Int. Cl. C22c 9/06; C22f 1/08

U.S. Cl. 148—32.5 **8 Claims**

The disclosure teaches novel copper base alloys having improved toughness and stress corrosion resistance. The copper alloys contain from 12.5 to 30 percent nickel, from 12.5 to 30 percent manganese, a material selected from the group consisting of aluminum from 0.01 to 5 percent, boron from 0.001 to 0.1 percent, magnesium from 0.01 to 5 percent and mixtures thereof and a material selected from the group consisting of zirconium, from 0.01 to 2.0 percent, titanium, from 0.01 to 2 percent, and mixtures thereof.

3,772,095

COPPER BASE ALLOYS

Stanley Shapiro, New Haven, Conn.; Alan J. Goldman, Silver Spring, Md.; Derek E. Tyler, Cheshire, and Richard D. Lanam, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 5, 1971, Ser. No. 196,093

Int. Cl. C22c 9/06; C22f 1/08

U.S. Cl. 148—32.5 **8 Claims**

The disclosure teaches novel copper base alloys having improved toughness and stress corrosion resistance. The copper alloys contain from 12.5 to 30 percent nickel, from 12.5 to 30 percent manganese, a material selected from the group consisting of aluminum from 0.01 to 5 percent, boron from 0.001 to 0.1 percent, magnesium from 0.01 to 5 percent and mixtures thereof and chromium from 0.01 to 1.0 percent.

3,772,096

METHOD FOR THE MANUFACTURE OF AN ELEMENT OF WATCH CASE AND ELEMENT OF WATCH CASE OBTAINED BY THIS METHOD

Charles Maquelin, 16, chemin Gabriel, Peseux, Switzerland

Filed Jan. 7, 1972, Ser. No. 216,275

Claims priority, application Switzerland, Jan. 13, 1971, 446/71

Int. Cl. C23c 11/10, 9/04

U.S. Cl. 148—6.3 **18 Claims**

Method of making a watch case element by forming same of molybdenum and hardening by carburization producing a surface layer of molybdenum carbide, said carburization being carried out during the final manufacturing stage. A further

treatment of the carburized element with hydrogen sulphide results in the formation of a dark coloured polishable surface which has fine brilliance.

3,772,097

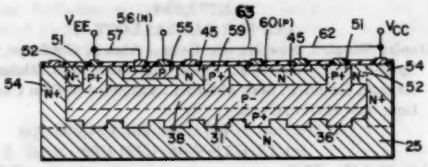
EPITAXIAL METHOD FOR THE FABRICATION OF A DISTRIBUTED SEMICONDUCTOR POWER SUPPLY CONTAINING A DECOUPLING CAPACITOR

Stanley P. Davis, Cupertino, Calif., assignor to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 637,144, May 9, 1967, Pat. No. 3,538,397. This application July 13, 1970, Ser. No. 61,040

Int. Cl. H01l 7/36, 19/00

U.S. Cl. 148—175 **5 Claims**



A monolithic semiconductor structure and method of making same and in which structure supply voltages are distributed through adjacent P and N type layers to surface regions of the structure. These voltages are available for integrated circuits and other devices which are constructed in the surface regions of the structure. Good capacitive decoupling is provided between the P and N layers used to distribute voltages and a relatively high capacitive reactance at the surface region prevents AC short circuits at high frequencies.

3,772,098

METHOD OF MANUFACTURING A FIELD EFFECT TRANSISTOR

Rene Tribes, Paris, France, assignor to CSF-Compagnie Generale de Telegraphie Sans Fil, Paris, France

Division of Ser. No. 833,845, May 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 603,046, Dec. 19, 1966, abandoned, which is a continuation-in-part of Ser. No. 318,450, Oct. 24, 1963, abandoned. This application Aug. 3, 1971, Ser. No. 168,776

Claims priority, application France, Nov. 2, 1962, 62914159

Int. Cl. H01l 7/44, 11/00

U.S. Cl. 148—189 **1 Claim**

A method of manufacturing field effect semi-conductor devices has been developed which comprises the steps of forming a silica layer on a silicon plate of selected conductivity-type, etching the layer over a predetermined surface portion, thus forming a window of bare silicon and forming another silica layer upon a portion of the window by masking thereby forming first and second regions in the window separated from each other by the other silica layer having a thickness less than the first mentioned silica layer. Further steps include diffusing activator impurities in the substrate in the window of opposite conductivity-type which form within the first and second regions respective source and drain regions. Thereafter the silicon plate is placed in a gas carrying a doping agent which thereby forms a channel under the other silica layer and thereafter metallic contacts are deposited upon the source and drain regions and a metal gate is deposited on the other silica layer.

3,772,099

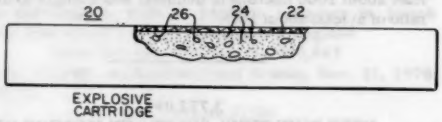
PHOSPHOR COMBINATION AND METHOD, PARTICULARLY ADAPTED FOR USE WITH EXPLOSIVES, FOR PROVIDING A DISTINCTIVE INFORMATION LABEL

Frederick M. Ryan, New Alexandria, and Robert C. Miller, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 17, 1971, Ser. No. 143,772

Int. Cl. F42b 33/14

U.S. Cl. 149—18 **14 Claims**



Phosphor-explosive material combination and method wherein a small amount of inorganic phosphor is mixed with explosive material to provide an indicia or label of information regarding the explosive, either before or after detonation of same. The phosphor can readily be located with an ultraviolet lamp even after the explosive has been detonated, and by correlating the phosphor emission spectra with data known about the explosive when it is manufactured, the explosive can be identified. Line-emitting phosphors are especially useful because of their distinctive emission characteristics, which provide a vast number of possible combinations of emission which are correlated against the data known about the explosive when it is manufactured. Preferably the phosphor is formed as a combination of finely divided "spotter" phosphor and finely divided "coding" material held together by a binder in the form of small conglomerates, in order to facilitate initial location and later identification of same. There exists a vast number of different combinations of distinctive fluorescent emission, and these can be combined to label any item for later identification.

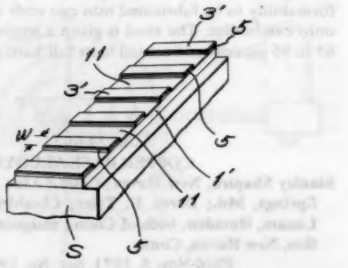
3,772,100

METHOD FOR FORMING STRIPS ON SEMICONDUCTOR DEVICE

Noboru Masuda, Kawaguchi; Yu Nishino, and Hiroaki Kase, both of Tokyo, all of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed June 30, 1971, Ser. No. 158,492

U.S. Cl. 156—3 **13 Claims**

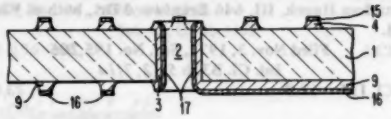


A method for forming a plurality of metal strips on a semiconductor device comprising forming a metallic layer on a surface of semiconductor base, coating a photo sensitive resin layer on the said surface of the metallic layer, forming at least one pattern corresponding to at least one metal strip on the sensitized resin layer and etching the metallic layer with an etching solution which oxidizes the semiconductor base.

3,772,101
LANDLESS PLATED-THROUGH HOLE PHOTORESIST MAKING PROCESS

Louis G. Chumbres, Poughkeepsie, and George J. Rudy, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 1, 1972, Ser. No. 249,325
Int. Cl. C23f 1/02
U.S. Cl. 156—11 8 Claims

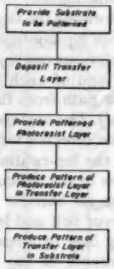


A method for producing landless plated through holes in a printed circuit board. Holes are drilled through a copper clad insulating board and all exposed surfaces are sensitized and plated. A tenting photoresist material is placed over at least one of the major surfaces of the drilled board. In a first species, negative or positive photoresist is placed on both sides of the board. In a second species, positive photoresist is placed on one surface of the board at a time. A desired circuit pattern is produced in the tented photoresist, the circuit pattern including hole configurations having diameters no greater than the drilled holes. Tin-lead solder is placed through the circuit and the hole locations in the photoresist, the photoresist is removed and the unwanted copper cladding is etched away using the solder as an etching resist. In the first species, the holes in the photoresist are made smaller than the drilled holes using a separate photomask. In the second species, the holes in the positive photoresist are made precisely equal in size to the drilled holes using the board itself as a photomask.

3,772,102
METHOD OF TRANSFERRING A DESIRED PATTERN IN SILICON TO A SUBSTRATE LAYER

Jerome J. Tiemann, Schenectady; William E. Engeler, Scotia, and Dale M. Brown, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 606,242, Dec. 30, 1966, abandoned. This application Oct. 27, 1969, Ser. No. 871,730
Int. Cl. H01l 7/00, 7/50
U.S. Cl. 156—13 5 Claims

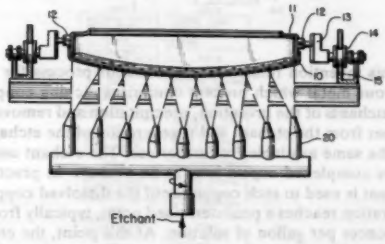

Provide Substrate to be Patterned
Deposit Transfer Layer
Provide Patterned Photoresist Layer
Produce Pattern of Photoresist Layer in Transfer Layer
Produce Pattern of Transfer Layer in Substrate

Methods for producing a desired pattern of retained and removed portions in a substrate layer of a material selected from the group consisting of silicon nitride, an oxide of silicon, and an oxynitride of silicon are disclosed. One method includes providing a transfer layer of silicon over the substrate layer, producing a pattern of removed and retained regions in the transfer layer and then etching the portions of the substrate layer exposed by the removed portions in the transfer layer with an etchant which etches the substrate layer without substantially etching the transfer layer to produce a pattern in the substrate layer substantially corresponding to that in the transfer layer. Other materials useful for transfer layers such as molybdenum, tungsten, nickel, chromium, and magnesium are also disclosed. Typical etchants for the various materials are also disclosed.

3,772,103
ETCH-BACK SCREENING

Jaroslaw A. Holowka, Chicago, and Martin L. Lerner, River Forest, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 1, 1971, Ser. No. 130,121
Int. Cl. C23g 1/08; C23f 1/02
U.S. Cl. 156—18 5 Claims

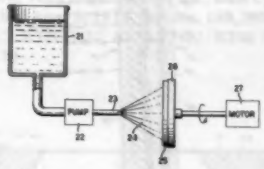


A shadow mask is initially prepared with apertures dimensioned for photoresist screening of a color picture tube and, after screening has been accomplished, the mask is re-etched to enlarge the apertures to a desired size in relation to the phosphor deposits. An improvement in the re-etch process is achieved by utilizing a substantially saturated solution of the etchant in the re-etch step.

3,772,104
FABRICATION OF THIN FILM DEVICES

Edwin Arthur Chandross, Murray Hill, and Theodore Arthur Shankoff, Mendham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 30, 1972, Ser. No. 239,497
Int. Cl. C23f 1/00, 1/02
U.S. Cl. 156—18 8 Claims



A process is described for the fabrication of devices in which thin films of tungsten are etched by a chemical procedure. This chemical procedure involves the use of ferricyanide as the oxidizing agent contained in an aqueous solution. The solution also contains a substance with an affinity for protons to promote the etching reaction. The pH of the etching solution is between 7 and 10 but can be higher if desired. Such etching solutions not only yield etching rates of practical interest, but are usable with photoresists which are

ordinarily attacked at high pH. In cases where enhanced etching resolution and uniformity is of particular importance, a special procedure is described which involves spraying the etchant and spinning the sample.

3,772,105

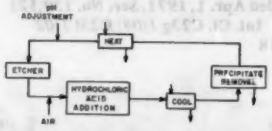
CONTINUOUS ETCHING PROCESS

Charles R. Shipley, Newton, Mass., assignor to Shipley Company, Inc., Newton, Mass.

Continuation-in-part of Ser. No. 58,170, July 24, 1970, Pat. No. 3,650,958. This application Mar. 16, 1972, Ser. No. 235,176

Int. Cl. C23f 1/00

U.S. Cl. 156—19 **27 Claims**



This invention relates to a continuous process for etching cuprous metal which process comprises etching copper with the etchants of the invention, precipitation and removal of the copper from the etchant and regeneration of the etchant making the same available for further use. The etchant used comprises complexed cupric ions as an oxidant. In practice, the etchant is used to etch copper until the dissolved copper concentration reaches a predetermined point, typically from 10 to 24 ounces per gallon of solution. At this point, the etchant is circulated in a loop where it is treated to precipitate dissolved copper, the precipitate is removed and the etchant is returned to the etching apparatus for further use.

3,772,106

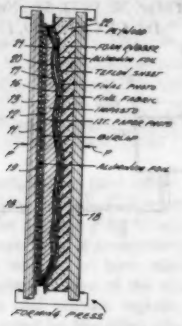
PROCESS OF MAKING TRIDIMENSIONAL COLOR PHOTOGRAPHS

Lewis A. Giorgi, 286 New Main St., Yonkers, N.Y.

Filed Aug. 10, 1971, Ser. No. 170,433

Int. Cl. B44c 1/20

U.S. Cl. 156—58 **8 Claims**



Life-like, natural-appearing relief colored photographs of persons, scenes, paintings, murals, etc. are made by a process herein called photoreliefography, which comprises molding an impasto on a black and white positive photoprint to provide merging raised and depressed contoured surfaces corresponding to the subject of the photoprint and on which a wet color photograph of the same subject is placed in registration and conformed to the molded impasto which is then dried in stages and cured for permanence. The completed studio photograph is protected by a coating of transparent lacquer.

3,772,107

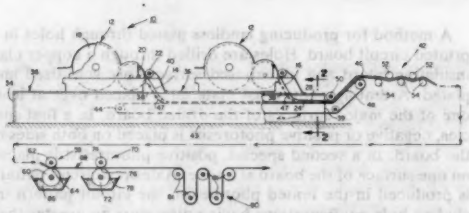
METHOD AND APPARATUS FOR FORMING A NONWOVEN FIBROUS WEB

Anthony R. Gentile, 833 N. Main Rd., Apt. 52A, and Clarence Jonathan Hauck, III, 646 Brentwood Dr., both of Vineland, N.J.

Filed Nov. 3, 1971, Ser. No. 195,205

Int. Cl. B32b 5/12, 7/14

U.S. Cl. 156—62.8 **23 Claims**



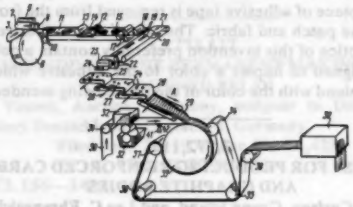
A method of forming a nonwoven fibrous web from multiple laps of staple fibers, the major proportion of fibers within each lap being substantially oriented in one direction. Laps of the staple fibers are fed into overlying relationship with the major proportion of oriented fibers in each lap disposed in the same direction. Air is entrapped between adjacent laps as they are fed into overlying relationship to create an air barrier between adjacent overlying laps. The overlying laps are spread transversely of the direction in which the major proportion of fibers are oriented, and fibers within overlying laps are reoriented transversely within the plane of the laps out of the direction in which the major proportion of fibers are oriented while maintaining the air barrier between the adjacent overlying laps. The laps are pressed together after the lap spreading and fiber reorienting steps to form a unitary nonwoven fibrous web and fibers of the unitary nonwoven fibrous web are then bonded together.

An apparatus for forming a nonwoven fibrous web from multiple laps of staple fibers, the major proportion of fibers within each lap being substantially oriented in one direction. Lap forming means for forming the laps of staple fibers and for generating air currents. A lap-confining channel is defined in part by a lower, air-impervious conveyor belt, and a shield encloses the downstream end of each lap forming means and defines an enclosed flow path from the lap forming means to the lap-confining channel. The enclosed flow path permits the laps of staple fibers to be directed into overlying relationship with each other within the lap-confining channel and aids in establishing laminar flow of the air currents into the lap-confining channel to define air barriers between adjacent laps, and between the conveyor belt and lower lap. The conveyor belt feeds the overlying laps to a spreading and reorienting means disposed downstream of the lap forming means for spreading the overlying laps transversely of their direction of feed and for reorienting fibers within overlying laps transversely within the plane of respective laps out of the direction in which the major proportion of fibers are oriented while maintaining the air barrier between the adjacent overlying laps. Calendering means disposed downstream of the spreading and reorienting means for pressing the overlying laps together to form a unitary nonwoven fibrous web, and bonding means disposed downstream of the calendering means for bonding together fibers of the unitary nonwoven fibrous web.

3,772,108
METHOD OF PRODUCING FUR PRODUCTS AND A DEVICE FOR CARRYING OUT THE METHOD

Iosif Solomonovich Lezhen, ulitsa Zodchikh, 40, kv. 77; Mikhail Grigorievich Ulyanov, ulitsa Zodchikh, 40, kv. 85; Vitaly Sergeevich Barilchenko, ulitsa Krasnoarmeiskaya, 129, kv. 22, all of Kiev, and Pavel Sergeevich Mokritsky, ulitsa Shelushokova, 5, kv. 1, Zhitomir, all of U.S.S.R.

Filed Dec. 15, 1971, Ser. No. 208,231
Claims priority, application U.S.S.R., Dec. 21, 1970, 1498567; Dec. 21, 1970, 1498568
Int. Cl. C14b *1/02*
U.S. Cl. 156—68 4 Claims

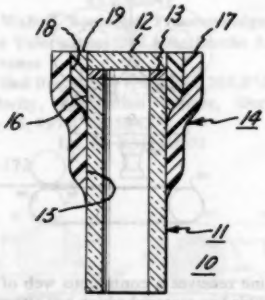


The production of fur materials in which the hair covering is cut off along with the skin base to make a split, then the skin base of the thus-obtained split is cut both longitudinally and transversely into individual pieces which are then separated into individual elements, each of which elements consists of the skin base and the hair covering. Thereupon, these elements are oriented in an electrostatic field with the hair covering upwards and cemented to the face of an artificial base.

3,772,109
SEAL AND CLOSURE FOR ION-SELECTIVE ELECTRODE

William T. Grubb, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 094,284, Dec. 2, 1970, Pat. No. 3,664,537.
This application Feb. 7, 1972, Ser. No. 224,227
Int. Cl. B29c *27/10*
U.S. Cl. 156—69 6 Claims

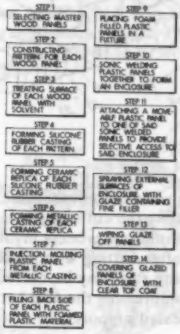


A closure seal for an ion-selective electrode has a room temperature sealant sealing an ion-selective material disc with a flat surface or with a controlled radius of curvature to one open end of a non-ion selective tube, an apertured member surrounding the disc, sealant and a portion of the tube, one end of the member being flush with the exterior surface of the disc, the same end of the member having an enlarged portion defining an opening adjacent the disc, sealant, and a portion of the tube, and a second room temperature sealant in the opening of the enlarged portion of the member. One such ion-selective electrode includes also a silver wire with a silver chloride portion positioned within the tube, a buffered chloride solution within the tube and in contact with the silver chloride portion of the silver wire, a closure over the opposite end of the tube with an aperture therein and a portion of the silver wire extending through the aperture in the closure to the exterior of the tube. A method of forming such a closure seal is also described.

3,772,110
METHOD FOR CONSTRUCTION OF PLASTIC ENCLOSURE

Leslie C. Brown, Decatur, Ill., assignor to General Electric Company, Syracuse, N.Y.

Filed Jan. 16, 1970, Ser. No. 3,454
Int. Cl. B32b *31/20*; A47b *81/06*; B29d *31/00*
U.S. Cl. 156—73 10 Claims


STEP 1
SELECTING MASTER WOOD PANELS
STEP 2
CONSTRUCTING PATTERN FOR EACH WOOD PANEL
STEP 3
TREATING SURFACE OF EACH WOOD PANEL WITH SOLVENT
STEP 4
FORMING SILICONE RUBBER CASTING OF EACH PATTERN
STEP 5
FORMING CERAMIC REPLICA OF EACH SILICONE RUBBER CASTING
STEP 6
FORMING METALLIC CASTING OF EACH CERAMIC REPLICA
STEP 7
INJECTION MOLDING PLASTIC PANEL FROM EACH METALLIC CASTING
STEP 8
FILLING BACK SIDE OF EACH PLASTIC PANEL WITH FOAMED PLASTIC MATERIAL
STEP 9
PLACING FOAM FILLED PLASTIC PANELS IN A FIXTURE
STEP 10
SONIC WELDING PLASTIC PANELS TOGETHER TO FORM AN ENCLOSURE
STEP 11
ATTACHING A MOVEABLE PLASTIC PANEL TO ONE OF SAID SONIC WELDED PANELS TO PROVIDE SELECTIVE ACCESS TO SAID ENCLOSURE
STEP 12
SPRAYING EXTERNAL SURFACES OF ENCLOSURE WITH GLAZE CONTAINING FINE FILLER
STEP 13
WIPING GLAZE OFF PANELS
STEP 14
COVERING GLAZED PANELS OF ENCLOSURE WITH CLEAR TOP COAT

Phonograph consoles are constructed from a series of all plastic panels which have been injection molded to very closely resemble the surfaces of master wooden panels. The plastic panels have a pressure-formed polyurethane foamed into their backs, and they are sonic welded together to form the console cabinet. The outer panel surfaces of the cabinet are sprayed with a glaze, after which a finishing coat is applied. The resultant phonograph console has a cabinet which not only has a wood grained finish, but also has excellent acoustical characteristics.

3,772,111
METHOD OF MAKING A TOILET SEAT

Milton Ginsburg, 1201 Sandringham Rd., Bala Cynwyd, Pa.

Filed Aug. 5, 1971, Ser. No. 169,380
Int. Cl. B32b *5/20*; A47k *13/02*; B29h *7/04*
U.S. Cl. 156—79 1 Claim

A toilet seat, exclusive of the hinge assembly, has only a resilient expanded-foam interior and a plastic film sheet cover. The toilet seat is made by pre-forming the film sheet cover in a mold and heat sealing it to form a tubular ring-like structure or annulus into the interior of which expandable foam material is injected to expand and fill the annulus. As an alternate method of manufacture, the resilient foam interior is pre-formed in a mold and then covered with plastic film which is

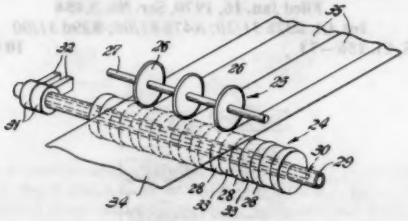
heat sealed. The toilet seat has no rigid base of wood, or other material. A small rigid bar of metal or other material is cemented to the interior of the seat. The bar has tapped holes therein for receiving screws of the hinge assembly.

3,772,112

WEB CUTTING PROCESS

Raymond T. Lyons, Franklin Lakes, and Max Pladek, Kearny, both of N.J., assignors to Textile Cutting Corporation, Hawthorne, N.J.

Filed Mar. 24, 1971, Ser. No. 127,718
Int. Cl. B32b *31/18, 31/26*
U.S. Cl. 156—88 **11 Claims**



Method for cutting webs of thermoplastic fabric into ribbon widths while heat-sealing the cut edges, which cutting may be accomplished in a continuous process involving the inking of the fabric before or after cutting without changing the speed of the web. The cutting step may be carried out at relatively slow web speed by compressing the web between an unheated cutting blade and a heated support.

3,772,113

METHOD FOR SEALING RUPTURES IN PIPES OR VESSELS WHILE IN SERVICE WITH GASEOUS SUBSTANCES UNDER PRESSURE

Frank D. Patrick, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 10, 1972, Ser. No. 225,334
Int. Cl. B32g *35/00*
U.S. Cl. 156—94 **5 Claims**

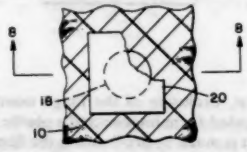
Ruptures in pipes or vessels while in service with gaseous substances under pressure are repaired by casting a rapid-setting urethane composition about a cleaned area surrounding the rupture.

3,772,114

PROCESS FOR MENDING FABRICS

Serhiy Kowalchuk, 700 Haines Ave., Wilmington, Del.

Filed Mar. 21, 1972, Ser. No. 236,773
Int. Cl. B32b *3/02*
U.S. Cl. 156—98 **4 Claims**



A layer of adhesive is applied over and around the damaged portion of a fabric. When the adhesive has dried the damaged portion is removed by cutting through the fabric and layer of adhesive thereby leaving an opening which is preferably round. A piece of the same fabric somewhat larger than the opening is similarly coated with a layer of adhesive and then cut to form a patch identical in shape and size to the opening formed in the fabric. The patch is then fitted in the opening in the fabric and a piece of adhesive tape applied thereover and over adjacent portions of the fabric to temporarily hold the patch in place. An adhesive which on drying and setting forms a flexible heat-resistant layer is applied over the back surface of the patch and adjacent portions of the fabric. A piece of a coarsely woven cloth is then applied over the layer of adhesive while it is still soft and pressed thereagainst so that the adhesive flows into and at least partially through the interstices of the cloth. When the adhesive has substantially completely dried the piece of adhesive tape is removed from the front surfaces of the patch and fabric. The adhesive or adhesives used in the practice of this invention preferably contain a color additive designed to impart a color to the adhesive which will match or blend with the color of the fabric being mended.

3,772,115

PROCESS FOR PRODUCING REINFORCED CARBON AND GRAPHITE BODIES

Walter H. Carlson, Grand Island, and Leo C. Ehrenreich, Buffalo, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 601,306, Dec. 13, 1966, Pat. No. 3,657,061. This application May 14, 1970, Ser. No. 48,728
Int. Cl. B32b *31/14*; B65h *81/00*; D04h *5/02*
U.S. Cl. 156—148 **5 Claims**

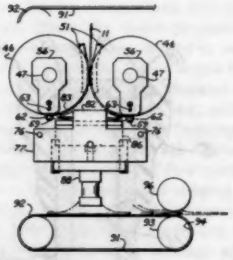
A high strength carbon or graphite body formed from a carbon or graphite fiber composite shape having fibers running in three dimensions and a carbon or graphite matrix. The fiber composite is formed by needling layers of carbon or graphite fibers to position some of the fibers of each layer into a running direction substantially perpendicular to the running direction of the layers.

3,772,116

APPARATUS AND METHOD FOR FORMING RECTANGULAR BOTTOM PLASTIC BAG MACHINE

Helmut T. Schaffron, c/o 710 Villanova Dr., Davis, Calif.

Filed Oct. 12, 1971, Ser. No. 188,112
Int. Cl. B31b *1/64*; B31f *1/08*
U.S. Cl. 156—221 **12 Claims**



The machine receives a continuous web of side-gussetted, flattened tabular bag material which has already been formed with a transverse bottom seal and transverse weakening perforations to be subsequently severed to form the open top. A pair of interrupted rotary motion, oppositely turning, resilient-surfaced rolls are grooved to receive vacuum tubes. As the web is pulled by the rolls, the vacuum splays the gussets outward to form triangular pockets of gusset material, providing openings for axially-moving fingers on the turning roll shafts to grip the outer corners of the bag bottom and pull the corners to about the bottom of the turning rolls, which then stop. Where the bottom is to be sealed, seal pads on opposite sides

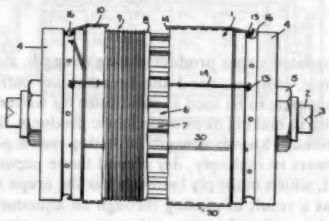
then move inward into the triangular pockets, there being a straight-longitudinal bottom edge as the base of the triangle. The fingers retract as the pads move inward. The bottom of the bag is now flat and open. Thereupon, a pair of heated seal bars engage the longitudinal bottom edges of the bag to form the longitudinal edge seals, the gusset material being held in position in the pads. The seal bars retract and the seal pads retract. After the bottom has been formed and optionally sealed, the rolls resume rotation and move the finished bag to the next station and feed the next bag to the fold station. A conveyor belt, travelling transversely, moves the completed bag to a position to be engaged by a set of rapidly rotating snap rolls which pull the completed bag apart from the web along the perforations.

3,772,117

METHOD FOR THE PERMANENT MAKING OF TOOTHED BELTS

Karl Vossen, Aachen, Germany, assignor to Uniroyal Englebert Deutschland AG, Aachen, Germany

Filed Sept. 22, 1970, Ser. No. 74,428
Int. Cl. B29h *7/22*
U.S. Cl. 156—140 **6 Claims**



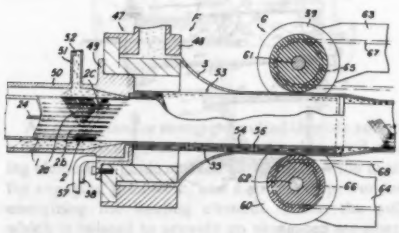
Permanent markings are formed on an elastomeric toothed belt for alignment of the drive system in which the belt is to be used by the application of strips of colored elastomeric material transversely across the belt in predetermined relationship with the belt teeth or gaps prior to the curing of the belt. The colored material enters into a firm bond with the elastomer of the belt upon curing.

3,772,118

CONTINUOUS PRODUCTION MACHINE FOR THE MANUFACTURE OF A COMPOSITE TUBULAR ELEMENT

Jean-Jacques Walter, Boulogne, France, assignor to Agence Nationale De Valorisation De La Recherche Anvar, Neuilly-sur-Seine, France

Filed Dec. 8, 1971, Ser. No. 205,852
Claims priority, application France, Dec. 11, 1970, 7044648; July 15, 1971, 7125943
Int. Cl. B31c *13/00*
U.S. Cl. 156—172 **16 Claims**



A reinforcement jacket surrounding a leak-tight inner sheath of plastic material is impregnated with a hardenable binder while at the same time forming an outer sheath of plastic material which applies the binder intimately and uniformly against the reinforcement jacket and then polymerizing the binder.

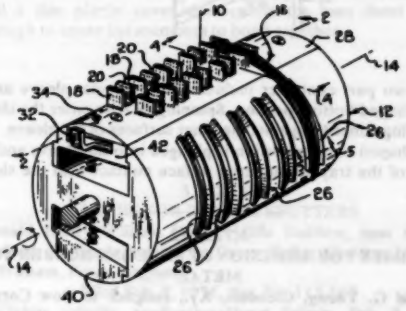
Successive operations performed by a continuous production machine comprise the continuous fabrication of an inner sheath of plastic material which is displaced over a mandrel and given a tubular shape, impregnation of the reinforcement material with a hardenable binder followed by polymerization of the binder. An outer sheath of plastic material surrounding the inner sheath and jacket is supplied continuously by an extruder and subjected to elongation at the outlet of this latter, thereby causing radial shrinkage of said outer sheath onto the jacket of the inner sheath.

3,772,119

METHOD FOR MAKING MONOFILAMENT FIBER OPTIC RIBBONS FOR COHERENT FIBERSCOPES

William F. Peck, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 824,764, May 15, 1969, Pat. No. 3,607,560. This application Oct. 22, 1970, Ser. No. 83,199
Int. Cl. B65h *81/00*
U.S. Cl. 156—173 **4 Claims**



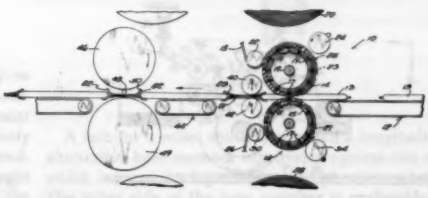
Monofilament optical fiber ribbons are formed by winding fiber convolutions one over another throughout a short section of the length of each ribbon, bringing the convolutions into accurately superimposed parallel relationship in said section of the ribbon and cementing across the section to hold same intact for assemblying and cementing together corresponding sections of a number of the ribbons as a fiberscope body.

3,772,120

METHOD FOR APPLYING ATTACHING TAPES TO PADS

Edmund Radzins, Sheboygan Falls, Wis., assignor to Curt G. Joa, Inc., Sheboygan Falls, Wis.

Filed Nov. 5, 1971, Ser. No. 196,118
Int. Cl. B32b *31/00*
U.S. Cl. 156—264 **11 Claims**



Attaching tapes and tape backing or liner are applied to pads such as disposable diapers as they are advanced past a

vacuum roller where strips of tape and tape backing are applied to successive pads to interconnect adjacent pad ends. The connected pads are advanced to a cut-off knife which cuts the tape and tape backing to separate the pads and leave each pad with a lined tape adhered thereto.

3,772,121

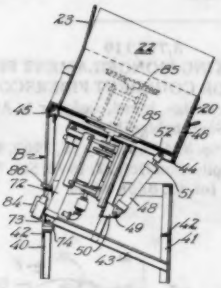
GLUE APPLYING METHOD

Theodore E. Peltier, Hugo, and Iver L. Nelson, Minneapolis, both of Minn., assignors to Hoerner Waldorf, St. Paul, Minn.

Filed June 15, 1971, Ser. No. 153,284

Int. Cl. B31b *11/00;* **B32b** *1/02*

U.S. Cl. 156—293 **1 Claim**



A two part container includes a rectangular sleeve and a tray-shaped bottom portion. Spinning nozzles enter the sleeve and fling adhesive against the inner surfaces of the sleeve. The tray-shaped bottom portion is plunged into the sleeve and the walls of the tray are adhered in face contact with the sleeve walls.

3,772,122

PRIMER FOR ADHESION OF SILICONE RUBBER TO METAL

Donald G. Young, Glendale, Ky., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 27,112, April 9, 1970, Pat. No. 3,677,998. This application Dec. 9, 1971, Ser. No. 206,564

Int. Cl. C09j *5/00;* **B32b** *15/08*

U.S. Cl. 156—329 **7 Claims**

A mixture of an organotitanate, tetra(methoxyethoxy)-silane, a methylsiloxane resin, acetic acid or an organotriacetoxysilane and a hydrocarbon solvent is useful as a primer in adhering a silicone rubber to a metal surface such as titanium.

3,772,123

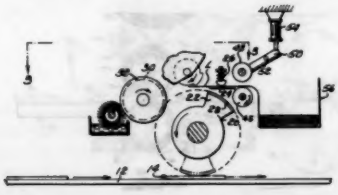
LABEL REJECT MECHANISM

Allan B. Clark, Newburgh, N.Y., and David A. Reed, Easton, Pa., assignors to Harris Intertype Corporation, Cleveland, Ohio

Filed Sept. 16, 1971, Ser. No. 181,036

Int. Cl. B32b *31/12;* **B65c** *9/06, 9/40*

U.S. Cl. 156—357 **8 Claims**



Apparatus for applying labels in a continuous process to magazines or the like and including a label reject mechanism selectively operative to reject, on command, an unwanted label after the label has been severed from the supply of labels but before glue has been applied to the label, and without interfering with the continuous operation of the label applying system.

3,772,124

METHOD OF FORMING TISSUE LAMINATE

Warren C. Mayer, Somerville, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 22,942, March 26, 1970, Pat. No. 3,720,573, which is a continuation-in-part of Ser. No. 671,963, Oct. 2, 1967, abandoned. This application Mar. 16, 1972, Ser. No. 235,413

Int. Cl. C09j *5/00*

U.S. Cl. 156—324 **7 Claims**

An impregnated paper product having strength, toughness, tear resistance, softness, hand and breathability sufficient to permit such papers to be used as substitutes for woven or non-woven fabrics in making disposable fabric products. By applying conventionally known strength imparting resins, polymers, and copolymers to multi-ply, dry creped tissue papers of low basis weight, which multi-ply laminate has the crepe removed therefrom as a result of passing through an aqueous suspension or emulsion of such resins, polymers or co-polymers, the stiffness, noisiness and loss of breathability that result from such impregnation of single ply creped or uncreped papers does not occur.

3,772,125

TIRE BUILDING DRUM HAVING A CARCASS PLY SUPPORT AND FOLDOVER MECHANISM

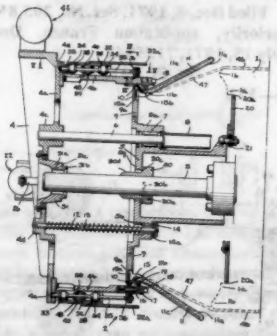
Jean Leblond, 5 bis rue du Lieutenant, Ducloux, Compiegne, France

Filed Sept. 7, 1971, Ser. No. 178,134

Claims priority, application France, Sept. 9, 1970, 7032770

Int. Cl. B29h *17/16, 17/22*

U.S. Cl. 156—402 **19 Claims**



A rotatable and axially movable carcass ply support associated with a pneumatic tire building machine or a collapsible rotating tire building drum. The support comprises a fer-

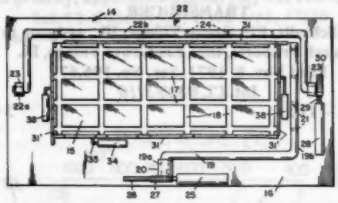
rule affixed to a ferrule-holder ring wich is able to rotate and slide axially with respect to the ends of the building drum by means of a plurality of roller bearings disposed within the ring. The ferrule-holder ring includes a drive element which cooperates with a servo means to allow axial movement of the ring and the ferrule with respect to the ends of the building drum. Cooperating with the ferrule and ferrule-holder ring is a bead-setting ring and a plurality of carcass ply foldover fingers. The ferrule supports the marginal edges of the carcass ply which may be wider than the building drum. The ferrule is able to rotate with the drum thereby preventing the distortion or twisting of the marginal edges.

3,772,126

APPARATUS AND METHOD FOR MAKING FIBERGLASS GRATING

Robert E. Myers, Houston, Tex., assignor to M & M International Plastics, Inc., Houston, Tex.

Filed Oct. 21, 1971, Ser. No. 191,184
Int. Cl. B32b *31/20*; B65h *57/04, 57/16*
U.S. Cl. 156—434 **4 Claims**



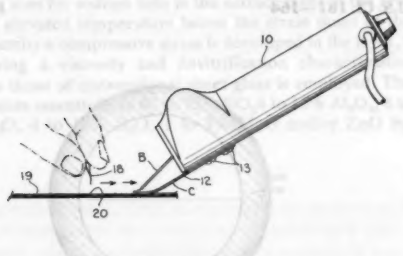
Fiberglass strands are wetted with catalyzed resin and are passed to movable arms of a weaving machine which deposits two sets of spaced parallel strands in a slotted form so that the sets of strands cross each other at an angle. The formed grating is ejected from the form into a pre-heated mold of a press, where the grating is compressed and cured.

3,772,127

THREAD FUSING AND SEVERING APPARATUS

Alexander James, 34 Isbell Ln., Greenville, S.C.

Filed Jan. 7, 1972, Ser. No. 216,019
Int. Cl. B65h *21/00, 69/06, 69/08*
U.S. Cl. 156—502 **7 Claims**



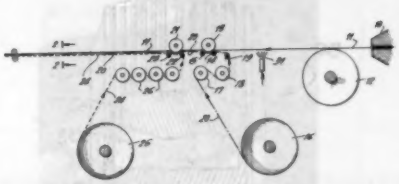
An apparatus for removing pulled threads and the like, from a fabric. The apparatus includes an elongated electrical heating element, a guide surface carried below the heating element for engaging the fabric, and a source of power for selectively energizing the heating element. When the pulled thread, which is twisted to provide an elongated member, is brought into engagement with the heating element, such severs the thread closely adjacent the fabric fusing the ends of the cut thread.

3,772,128

MACHINE FOR CONTINUOUSLY PRODUCING LARGE AREA LIGHT POLARIZING PANELS

Myron Kahn, Northridge, and William R. Werderman, Santa Susana, both of Calif., assignors to Polarized Corporation of America, Northridge, Calif.

Filed Sept. 21, 1970, Ser. No. 73,847
Int. Cl. B31f *5/00*; B32b *31/00*
U.S. Cl. 156—555 **4 Claims**



A large area light polarizing panel is continuously produced by laminating a layer of a light transmitting foamed cellular plastic material between a self supporting plastic base sheet and a thin plastic cover sheet while the base sheet is hot enough to cause the members to bond together.

3,772,129

LATHS FOR ROLLER SHUTTERS

Donald Henry William Dover, Little Baddow, near Chelmsford, England, assignor to Dover Roller Shutters Limited, Witham, Essex, England

Filed Feb. 8, 1971, Ser. No. 113,565
Claims priority, application Great Britain, Feb. 9, 1970, 6,171/70
Int. Cl. B32b *1/04, 3/10, 15/08*
U.S. Cl. 161—43 **2 Claims**

A lath for a roller shutter, in which a longitudinal extruded aluminium base member is provided against one major face of which is located a layer of foamed plastic insulating material. The other side of the base member is preferably coated with an insulating layer consisting of a microcellular elastomeric material.

3,772,130

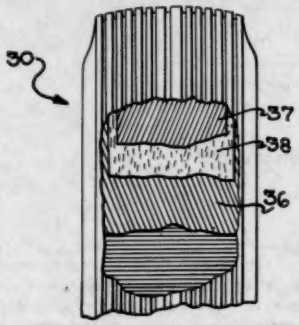
TIRE CONSTRUCTION AND ASSEMBLY TECHNIQUE

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 849,766, Aug. 13, 1969, abandoned, Division of Ser. No. 199,019, Oct. 15, 1971. This application Nov. 15, 1971, Ser. No. 198,663

Int. Cl. B32b *5/12;* **B29h** *17/28;* **B60c** *11/00*

U.S. Cl. 161—55 **4 Claims**



Radial tire constructions are disclosed featuring glass cord belt reinforcement of particular angular disposition as permits manufacture of the tire by conventional "flat band" techniques as opposed to the usual techniques employed in the manufacture of conventional radial ply tires.

3,772,131

FLOCKED SPUNLACED BLANKET

Benny L. Triplett, Pleasant Garden, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Oct. 1, 1971, Ser. No. 185,720

Int. Cl. B32b *3/00;* **D04h** *11/00*

U.S. Cl. 161—64 **17 Claims**

A process for producing a durable textile fabric, for use as a bed blanket and the like, from a nonwoven spunlaced material by application of a fibrous substance to at least one side of the spunlaced material by flocking techniques is disclosed. The spunlaced nonwoven which is utilized comprises a nonwoven fabric having a fiber entanglement completeness of at least 0.5, and being preferably formed from polyester fibers having average fiber lengths of between ¼ inch and 5 inches with an average fiber denier of about 0.50 to 20. An adhesive material is first applied to the spunlaced substrate, then the flocking fibers, having a denier of about 0.5 to 10 and a length or mixture of lengths ranging from 0.5 to 8 mm, are applied using conventional techniques. The resulting product, functionally sound and lightweight, is also described.

3,772,132

FLOCKED FABRIC AND METHOD FOR MAKING SAME

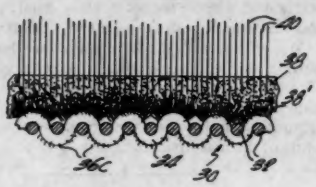
G. N. Dulin, Jr., West Buxford, Mass., assignor to Malden Mills, Inc., Lawrence, Mass.

Filed Apr. 3, 1972, Ser. No. 240,428

Int. Cl. D03d *27/00;* **D04h** *11/00*

U.S. Cl. 161—64 **43 Claims**

There is disclosed a flocked fabric which is both highly drapeable and strong, and a method for making it. The fabric backing is napped prior to the application of adhesive thereto. The napping, or fiber maze, which extends from the fabric backing is entrained in the adhesive layer, as are the flock



fibers. The fiber maze prevents the adhesive from substantially penetrating into the fiber backing and this, in turn, enhances the drapeability of the finished fabric and increases its tear strength.

3,772,133

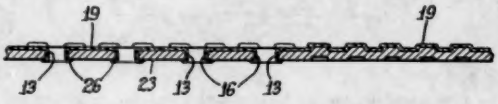
BACKPLATE CONSTRUCTION FOR ELECTRET TRANSDUCER

Thomas H. Schmitt, Elk Grove Village, Ill., assignor to Industrial Research Products, Inc., Elk Grove Village, Ill.

Filed Nov. 8, 1971, Ser. No. 196,677

Int. Cl. B32b *3/10*

U.S. Cl. 161—112 **3 Claims**



An electret transducer having a perforate backplate wherein the side of the perforations or holes are coated with a dielectric material.

3,772,134

QUARTZ GLASS ELEMENTS

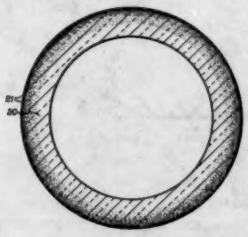
Karlheinz Rau, Hanau-on-Main, Germany, assignor to Heraeus-Schott Quarzschmelze GmbH, Hanau-on-Main, Germany

Filed July 28, 1971, Ser. No. 166,842

Claims priority, application Germany, Aug. 4, 1970, P 20 38 564.2

Int. Cl. B32b *7/02;* **B23b** *17/06;* **C03c** *3/06*

U.S. Cl. 161—164 **11 Claims**



Quartz glass element, such as a diffusion tube useful in the production of semiconductor elements, capable of forming an outer layer of uniformly fine crystalline silica such as cristobalite or tridymite when heated to a temperature at which such crystalline silica forms containing crystallization

promoting nuclei having a rate of diffusion in quartz glass less than that of sodium at elevated temperatures. Such nuclei are present in the outer half of the element wall and the maximum concentration of such nuclei is at the surface of the element and then diminishes inwardly. When the quartz glass element is exposed to elevated temperatures, the nuclei promotes the formation of the outer layer of uniformly fine crystalline silica which imparts thermal dimensional stability for extended periods of use at elevated temperatures.

3,772,135

GLASS STRENGTHENED BY ION AND METHOD OF PREPARING THE SAME

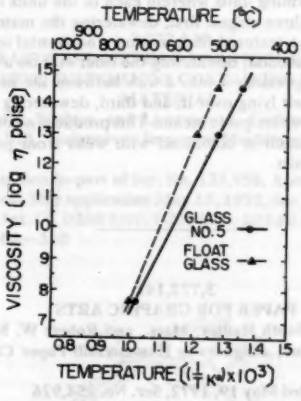
Morihisa Hara; Yoshiro Suzuki, both of Tokyo; Hironori Ohta, and Michihiko Uemura, both of Kanagawa-ken, all of Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 52,406, July 6, 1970, abandoned. This application Apr. 17, 1972, Ser. No. 244,851

Claims priority, application Japan, July 10, 1969, 44/54101

Int. Cl. C03c *21/00*; **B32b** *5/14, 17/10*

U.S. Cl. 161—164 **5 Claims**



In a process of strengthening a glass article by substituting potassium ions for sodium ions in the surface layer of the article at an elevated temperature below the strain point of the glass, whereby a compressive stress is developed in the layer, a glass having a viscosity and devitrification characteristics similar to those of conventional sheet glass is employed. The glass consists essentially of 60 to 75% SiO_2, 4 to 15% Al_2O_3, 8 to 15% Na_2O, 4 to 10% K_2O, 1 to 8% MgO and/or ZnO by weight.

3,772,136

FIBROUS PRODUCTS FROM THERMOPLASTIC POLYAMIDE POLYMERS

Clayton E. Workman, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 741,433, July 1, 1968, abandoned. This application Apr. 20, 1971, Ser. No. 135,682

Int. Cl. B32b *5/02*; **D04h** *1/00*

U.S. Cl. 161—169 **13 Claims**

An air pervious, water repellent, self-supporting fibrous mat is produced by spraying a mixture of polyamide polymer and a suitable, rapidly evaporating compatible solvent. The fibrous

mats are suitable for use as fabrics, decorative applications, tamper-proof bottle sealers, packaging materials, etc.

3,772,137

POLYESTER PILLOW BATT

James W. Tolliver, Kinston, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 763,841, Sept. 30, 1968, abandoned. This application June 8, 1971, Ser. No. 151,009

Int. Cl. A47c *27/22*

U.S. Cl. 161—169 **2 Claims**

A batt having high filling power and bulk under load comprising crimped hollow polyester filaments. Critical ranges for the percent void, denier, crimp frequency, and crimp index are defined for the fibers which interact to provide batts having higher bulk under load than would be expected by virtue of the voids alone when compared with the bulk of solid fibers. Also disclosed is a process for making the batts.

3,772,138

CHEMICALLY EMBOSSED SURFACE COVERINGS USING BARRIER FILM

Jack H. Witman, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

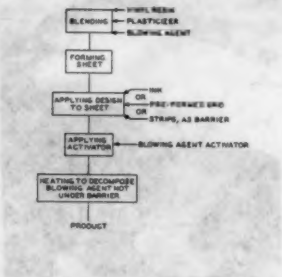
Filed Aug. 16, 1966, Ser. No. 572,710

Int. Cl. E06b *3/92*

U.S. Cl. 161—161 **17 Claims**

An embossed thermoplastic sheet. There is blended a vinyl resin, a plasticizer for the resin, and a blowing agent decomposing at an appropriate temperature range. No blowing agent activator is added. The blend is formed into a sheet, preferably by laying down a film of the plastisol on a backing followed by sufficient heat to gel the plastisol without decomposing any of the blowing agent. A barrier film in a predetermined design is applied to the gelled sheet in the pattern which will reproduce the depressed areas in the final product. The barrier film is impenetrable to a blowing agent activator. There is then applied

over the entire surface of the sheet a liquid containing a blowing agent activator in order that the activator will penetrate into the sheet only in those areas left exposed by the barrier film; no penetration is achieved in the areas where the barrier



film is present. A wear layer may or may not be applied over the resulting system. Subsequent application of heat is such to decompose the blowing agent only in those areas contacted by the activator, leaving the blowing agent in the regions under the barrier film undecomposed.

3,772,139

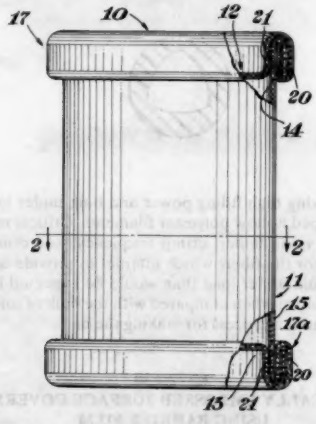
GALVANICALLY-DESTRUCTING METAL STRUCTURES

Percy F. George, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 4,614, Jan. 21, 1970, Pat. No. 3,629,092. This application May 20, 1971, Ser. No. 145,300. The portion of the term of this patent subsequent to Dec. 21, 1988, has been disclaimed.

Int. Cl. B32b *15/04, 15/20*

U.S. Cl. 161—225 **6 Claims**



A metal laminate is provided which will deteriorate at least in part after the interior of the laminate is contacted by moisture. Self-destructing containers are fabricated of this structural laminate. The laminate includes at least two layers of dissimilar metals, the layers being electronically connected and one layer being anodic to the other layer. Positioned between the metal layers is at least one layer of an electrolyte-forming composition capable of establishing ionic communication between the metal layers when the composition is contacted with moisture. A preferred electrolyte-forming composition is an inorganic salt, such as ammonium chloride or sodium chloride. When the electrolyte-forming composition is contacted by sufficient moisture to provide ionic conduction between the metal layers, a galvanic cell is formed in which the anodic metal layer deteriorates by galvanic corrosion.

3,772,140

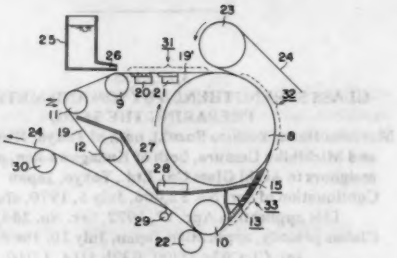
HIGH SPEED PAPER WEB FORMING AND COMBINING SYSTEM WITH A STATIONARY WATER GUIDE

Tadashi Kobayashi, 1560-2 Higashihara Tenma, Fuji-shi, Shizoka-ken, Japan

Filed Dec. 27, 1971, Ser. No. 212,092

Int. Cl. D21f *11/08, 9/04*

U.S. Cl. 162—133 **3 Claims**



A high-speed web forming and combining apparatus having several web-forming units wherein each of the units dewaters fluid stock in three stages: first, dewatering the material and forming it into a textured fiber mat on a horizontal section of an inner wire, second, dewatering the fiber mat on a cylinder mold and compressing it into a web between the inner wire and an outer belt lying over it, and third, dewatering the web by a stationary water guide means. This produces a completely formed web which is combined with webs from preceding web-forming units.

3,772,141

PAPER FOR GRAPHIC ARTS

Chi C. Chen, South Hadley, Mass., and Robert W. Matchett, Suffield, Conn., assignors to Hammermill Paper Company, Erie, Pa.

Filed May 19, 1972, Ser. No. 254,926

Int. Cl. D21h *5/18, 3/14*

U.S. Cl. 162—145 **1 Claim**

A graphic art paper composed of asbestos fiber, cellulose fiber and glass fiber and a cooperant partially cross-linked gelatin size, the synergistic mixture forming a non-puckering substrate for artists' water colors.

3,772,142

N-SULFOHYDROCARBON-SUBSTITUTED ACRYLAMIDE POLYMERS AS FORMATION AIDS FOR NON-WOVEN STOCK

Roger H. Doggett, Natick, and Richard P. Tschirch, Westwood, both of Mass., assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Mar. 23, 1971, Ser. No. 127,384

Int. Cl. D21h *3/58*

U.S. Cl. 162—168 **9 Claims**

Polymers of N-sulfohydrocarbon-substituted acrylamides, especially the alkali metal salts of 2-acrylamido-2-methylpropanesulfonic acid, are useful as fiber dispersants in the preparation of paper and similar stock.

3,772,143
METHOD OF SIZING PAPER WITH A SULPHONIUM RESIN COPOLYMER

Harold H. Roth, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 2, 1970, Ser. No. 77,746
Int. Cl. D21d *3/00*; D21h *3/38*
U.S. Cl. 162—169 **6 Claims**

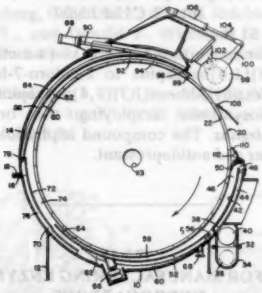
Paper is effectively sized by incorporating a small quantity of a water-soluble sulfonium resin copolymer of 65-90 mole percent vinylbenzyl chloride-thiodiethanol adduct units and 35-10 mole percent of

wherein A is hydrogen, a lower alkyl group, a phenyl group or a tolyl group.

3,772,144
APPARATUS AND METHOD FOR THICKENING AND WASHING SUSPENSIONS CONTAINING FIBROUS MATERIAL

Oscar Luthi, Nashua, and Lawrence A. Carlsmith, Amherst, both of N.H., assignors to Improved Machinery Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 133,958, April 14, 1972, abandoned. This application May 15, 1972, Ser. No. 253,198
Int. Cl. D21d *5/02*; D21f *1/60*; B01d *33/06*
U.S. Cl. 162—210 **46 Claims**

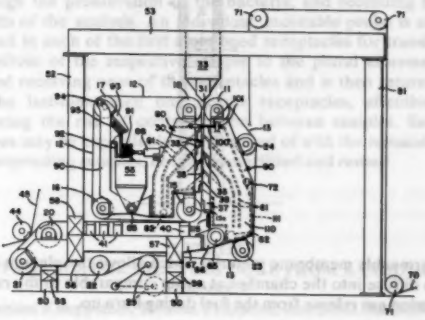


Apparatus comprising at least one rotatably driven drum having a circumferential filter medium adjacent which pressurized liquid suspension containing fibrous material is supplied in the rotary direction of the drum driven rotation. One or more baffles, having low friction material on their surfaces opposing the filter medium, are resiliently biased by pressurized liquid and/or mechanical biasing means to gradually converge towards the filter medium in the rotary direction of the drum driven rotation, and fibrous material collected on the filter medium may be washed by either the biasing liquid or separately supplied pressurized liquid. Also, a method for processing a suspension containing fibrous material through the employment of such an apparatus.

3,772,145
PIVOTAL MOUNTING STRUCTURES FOR VERTICAL TWIN-WIRE PAPERMAKING MACHINE

Willard C. Notbohm, Watertown, N.Y., assignor to The Black Clawson Company, Hamilton, Ohio

Filed Mar. 31, 1971, Ser. No. 129,852
Int. Cl. D21f *1/00*
U.S. Cl. 162—273 **11 Claims**



In a vertical twin-wire paper machine in which the wires may wrap around a common turning roll, the breast roll support rolls and associated deflectors for each of the opposed reaches of the two wires which converge to define the forming zone are supported on essentially unitary frame members mounted for pivotal movement toward and away from each other between operative positions and retracted positions for wire changing and replacement or other maintenance of the deflectors. The common turning roll is mounted on one of the unitary frame members by a bracket and can be located at the lower end of the frame member in machines wherein the wire convergence is downwardly or at the upper end of the frame member in machines wherein the wire convergence is upwardly.

3,772,146
NOVEL METHOD OF PRODUCING RADIOACTIVE IODINE

Eiji Shikata, and Hiroshi Amano, both of Oaza Funaishikawa, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Mar. 17, 1971, Ser. No. 125,337
Claims priority, application Japan, Mar. 23, 1970, 45/23537
Int. Cl. G21g *1/00*
U.S. Cl. 176—16 **8 Claims**

Radioactive iodine (I-131) is easily obtained by heating, at a temperature preferably ranging from 400° to 700°C, tellurium trioxide which was irradiated with a neutron flux. Thus, the complicated operations required in a conventional process for separation and/or purification of the product are eliminated.

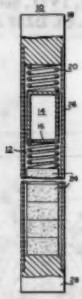
3,772,147
PRESSURIZED FUEL ELEMENTS FOR A NUCLEAR REACTOR

Raymond J. Bratton, Delmont; Elwyn Roberts, Penn Hills, and Peter G. Smerd, Shadyside, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 27, 1970, Ser. No. 84,302
Int. Cl. G21c *3/04*
U.S. Cl. 176—68 **7 Claims**

An internally pressurized hermetically clad fuel element for a nuclear reactor having a normally sealed chamber within the

fuel element plenum. The chamber is maintained at a lower pressure than the internal pressure of the fuel element and at least a portion of one of the chamber walls is formed from a



permeable membrane material which allows the plenum gases to diffuse into the chamber at a rate comparable to the rate of fission gas release from the fuel during burn up.

3,772,148

NUCLEAR REACTOR FUEL ELEMENT SPACER GRID

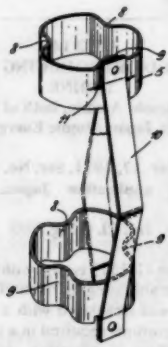
Thomas Seddon, St. Anne's, Lancashire, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 25, 1970, Ser. No. 66,711

Claims priority, application Great Britain, Sept. 3, 1969, 43,717/69

Int. Cl. G21c *3/34, 3/30*

U.S. Cl. 176—78 **10 Claims**



A spacer grid for a nuclear reactor fuel assembly is of cellular form being constructed, for example, from two superimposed layers of cojoined tubular ferrules. Each of the fuel pins passes through a corresponding pair of ferrules in the two layers. Two circumferentially spaced rigid support members extend into one of each pair of ferrules and a single rigid support member extends into the other of the pair of ferrules. The fuel pin extending through each pair of ferrules contacts the rigid support members therein, the rigid support members being positioned at points on the corner of a triangle and the fuel pin being biassed into contact with the support members by a bow spring extending between the pair of ferrules.

3,772,149

PRECIPITATION OF VIRUS PARTICLES

Colin Burbidge, Crawley, England, assignor to Beecham Group Limited, Brentford, England

Filed July 19, 1971, Ser. No. 164,094

Claims priority, application Great Britain, Aug. 15, 1970, 39,436/70

Int. Cl. C12k *7/00*

U.S. Cl. 195—1.5 **89 Claims**

A process for the precipitation of virus particles from a suspension thereof in a liquid medium which process comprises adding a nitrogen-containing base to the suspension of virus particles and if necessary adjusting the pH of the liquid medium to a pH below about 5.5, thereby precipitating the virus particles.

3,772,150

PROCESS FOR PRODUCING VITAMIN D_3 METABOLITE

Anthony W. Norman, Riverside; James F. Myrtle, Richmond; Ronald J. Midgett, Sunnymead, and Henry G. Nowicki, Riverside, all of Calif., assignors to The United States of America as represented by the Secretary of the Department of Health Education and Welfare, Washington, D.C.

Filed Dec. 29, 1971, Ser. No. 213,744

Int. Cl. C12d *5/00*; C07c *171/10*

U.S. Cl. 195—51 R **10 Claims**

A method of making a rapidly acting polar metabolite of Vitamin D_3 in vitro by digesting 25-hydroxycholecalciferol with a mitochondrial preparation of kidney tissues.

3,772,151

PREPARATION OF 2-CHLORO-7-HYDROXY-11-(4-METHYL-1-PIPERAZINYL)- DI BENZ(B,F)-OXAZEPINE

William James McGahren, Demarest, and Martin Paul Kunstmann, Pearl River, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sept. 29, 1972, Ser. No. 293,711

Int. Cl. C12d *13/00*

U.S. Cl. 195—51 R **4 Claims**

A method for converting 2-chloro-11-(4-methyl-1-piperazinyl)dibenz[b,f][1,4]oxazepine to 2-chloro-7-hydroxy-11-(4-methyl-1-piperazinyl)dibenz[b,f][1,4]oxazepine through fermentative biosynthesis employing the organism *Cunninghamella elegans*. The compound is physiologically active as a tranquilizer and antidepressant.

3,772,152

PROCESS FOR MANUFACTURING ENZYMES FROM HYDROCARBONS

Regis De Baynast, Versailles, France, assignor to Institut Francais du Petrole, des Carburants et Lubrifiants et Entreprise de Recherches et d'Activites Petrolieres, ELF

Filed Aug. 30, 1971, Ser. No. 176,186

Claims priority, application France, Sept. 7, 1970, 7032505

Int. Cl. C07g *7/02*; C12d *13/10*

U.S. Cl. 195—66 R **16 Claims**

Process for manufacturing enzymes comprising cultivating hydrolase excreting microorganisms in a nutrient culture medium, sporulating the resulting microorganisms, separating the enzymes from the liquid phase, the essential nitrogen and carbon source of the culture medium consisting of a yeast-cell containing fermentation product of yeasts on a substrate consisting essentially of hydrocarbons including a substantial part of linear paraffinic hydrocarbons.

3,772,153

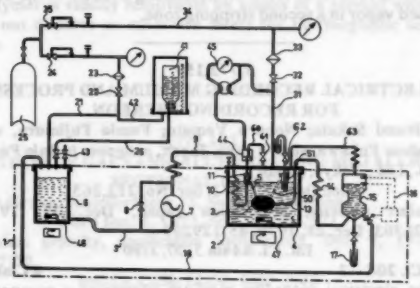
APPARATUS FOR THE PRESERVATION OF ANIMAL OR HUMAN ORGANS IN LIVING CONDITION

Henry De Roissart, Grenoble, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Continuation-in-part of Ser. No. 812,696, April 2, 1969, Pat. No. 3,607,646. This application Feb. 25, 1971, Ser. No. 118,653

Int. Cl. C12k *1/10*

U.S. Cl. 195—127 6 Claims



An apparatus for the preservation of living tissue such as an organ excised from the body for an extended time with a view toward future transplant thereof. The organ is placed in a refrigerated environment and under pressure while a nutrient fluid is circulated through its arterial complex. The gas utilized for pressurizing the environment of the organ is bio-chemically inert and serves as a carrier of oxygen which is absorbed by the nutrient, the latter being subjected to the influence of the pressurizing gas.

3,772,154

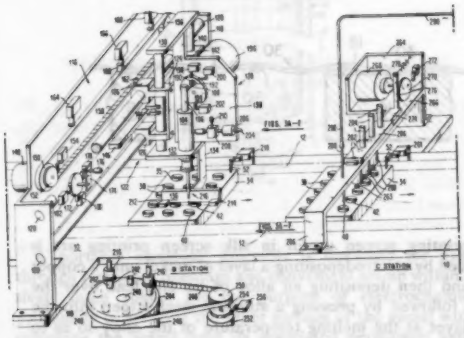
METHOD AND APPARATUS FOR AUTOMATED ANTIBIOTIC SUSCEPTIBILITY ANALYSIS OF BACTERIA SAMPLES

Henry D. Isenberg, Great Neck; Allen S. Reichler, Pearl River, both of N.Y., and Donald F. Wiseman, Wayne, N.J., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed May 3, 1971, Ser. No. 139,435

Int. Cl. C12k *1/04*

U.S. Cl. 195—103.5 R 10 Claims



Method and apparatus for automated antibiotic susceptibility analysis of bacteria samples including a device for feeding in succession a plurality of different samples, each of a significant, unknown bacterium from a respective receptacle to plural respective ones of receiving receptacles in which the sample portions are treated or conditioned, and, in at least certain of the last-mentioned receptacles, the growth of bacteria is challenged by addition of different antibiotics respectively thereto. Samples are incubated and subsequently killed, bacteria from the respective and receiving receptacles are removed by sampling for counting and comparison indicating, with the use of a control, relative antibiotic susceptibility through the proliferation of the bacteria, and recording the results of the analysis. An individual, moveable probe is employed in each of the first mentioned receptacles for transfer therefrom of the respective sample to the plural aforementioned receiving ones of the receptacles and is then returned to the last-mentioned one of the receptacles, effectively reducing the risk of contamination between samples. Such probes may be expendable and disposed of with the remaining corresponding samples, or may be sterilized and reused.

3,772,155

APPARATUS FOR EJECTING COKE FROM A COKING FURNACE

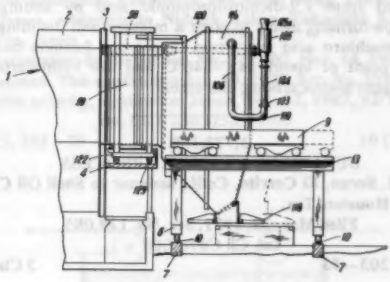
Johannes Knappstein, Helmut Fritzsche, and Josef Stratmann, all of Recklinghausen, Germany, assignors to Firma Carl Still, Germany

Filed Aug. 25, 1971, Ser. No. 174,700

Claims priority, application Germany, Sept. 18, 1970, P 20 46 116.9

Int. Cl. C10b *27/00*

U.S. Cl. 202—263 4 Claims



An apparatus for ejecting coke from a coking furnace includes a coke box which is mounted on a car for transverse movement toward and away from the furnace doors and for longitudinal movement on a carriage along the length of the coking furnace battery. The coke box is shorter than the coke cake to be received and it includes a movable coke cake guide arranged between the chamber door frame and a coke box. The coke cake guide is movable along a platform alongside the furnace doors between the furnace doors and the coke box.

3,772,156

PURIFICATION OF ACETIC ACID STREAMS BY DISTILLATION

William R. Johnson, and Thomas C. Singleton, both of Texas City, Tex., assignors to Monsanto Company, St. Louis, Mo.

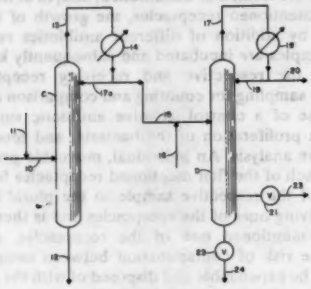
Filed Nov. 19, 1971, Ser. No. 200,553

Int. Cl. B01d *3/34*; C07c *51/44*

U.S. Cl. 203—33 9 Claims

The purification of acetic acid to remove very minor amounts of iodine in the parts per billion range is effected by

means of a two-column distillation of the acid containing such iodine contamination in the presence of a chemical agent



which is either an alkali metal compound, an alkaline earth metal compound, or a mixture of either of these compounds with hypophosphorous acid.

3,772,157

PURIFICATION OF 2-CHLOROALKANOIC ACIDS BY AZEOTROPIC DISTILLATION

Lee H. Horsley, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 10, 1971, Ser. No. 206,861

Int. Cl. C07c *53/16*; B01d *3/36*; C07c *53/32*

U.S. Cl. 203—52 **11 Claims**

Monochloroacetic acid can be separated efficiently from dichloroacetic acid and 2-chloropropionic acid can be separated from 2,2-dichloropropionic acid by adding an azeotrope-forming agent to such a mixture and distilling off the monochloro acid azeotrope. Azeotrope formers have a boiling point of about 145°-240°C and are hydrocarbons, halogenated hydrocarbons, and ethers.

3,772,158

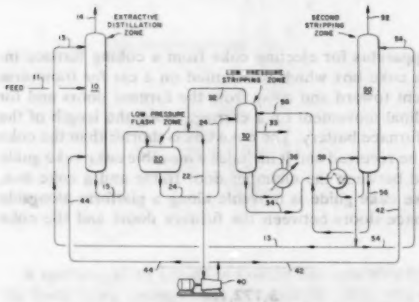
BUTADIENE RECOVERY PROCESS

Dante H. Sarno, El Cerrito, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 29, 1971, Ser. No. 129,085

Int. Cl. C07c *7/08*

U.S. Cl. 203—53 **3 Claims**



A process for separating butadiene from mixtures of butadiene and C_4 unsaturates in an extractive distillation of the mixture in the presence of a polar solvent and recovering the butadiene from the fat solvent mixture is disclosed. The butadiene-containing hydrocarbon mixture is introduced to the intermediate portion of an extractive distillation zone wherein it is contacted with the polar solvent which flows downwardly in the zone. In this manner butadiene is recovered in the fat solvent from the bottom of the extractive distillation zone. This fat solvent is introduced to a flash zone, operated at a pressure lower than that of the extractive distillation zone wherein a major portion of the butadiene is vaporized. The remaining solvent, partially depleted in butadiene, is then transferred to a first stripping zone operated at a pressure lower than the extractive distillation zone where the remaining butadiene is stripped from the solvent. The butadiene rich vapor from this first stripping zone is then combined with the vapor obtained in the flash zone and the resulting mixture is compressed. A portion of the compressed vapor is returned to the bottom portion of the extractive distillation zone and butadiene is recovered from the remaining portion of the compressed vapor in a second stripping zone.

3,772,159

ELECTRICAL RECORDING MEDIUM AND PROCESS FOR RECORDING THEREON

Toshibumi Sakata; Noboru Yamato; Fumio Fujimura, and Tadasu Fukawa, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,263

Claims priority, application Japan, Dec. 29, 1970, 45/126303; Dec. 25, 1970, 45/129299

Int. Cl. B44m *5/00*, *5/20*

U.S. Cl. 204—2 **4 Claims**

The electrical recording medium comprises a composite mounted on a base sheet, said composite comprises an electron-donative color reactant, an electron-acceptive material and an electric conductive material, the electron-donative color reactant and the electron-acceptive m material being reacted thereby the color reactant coloring by itself, and said reaction brough about by multiplex effect of the electrolytic reaction and/or the exothermic reaction by applying the electric current. The recording process for recording on said electrical recording medium comprises the steps of mounting a composite comprising an electron-donative color reactant, an electron-acceptive material and an electric conductive material upon a base sheet, making a reaction between the electron-donative color reactant and the electron-acceptive material owing to an effect of or a multiplex effect of an electrolysis and/or an exothermic reaction, and thereby coloring the color reactant.

3,772,160

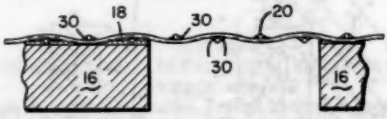
METHOD OF ELECTROFORMING A PRINTING SCREEN

Lloyd G. Arndt, St. Paul, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.

Filed July 8, 1971, Ser. No. 160,826

Int. Cl. C23b *7/00*; B30b *9/06*

U.S. Cl. 204—11 **3 Claims**



A printing screen useful in silk screen printing art is produced by electrodepositing a layer of nickel onto a copper base and then depositing an alloy of tin and lead over the nickel followed by pressing a stainless steel screen into the alloy layer at the melting temperature of the alloy so as to laminate the screen to the nickel layer. The copper base is then etched away leaving only the nickel supported screen. The particular pattern to be printed is originally formed in plating resist on the copper base so as to exclude nickel from the areas of the screen corresponding to the pattern.

3,772,161

METHOD OF SELECTIVELY ELECTROPLATING THERMOPLASTIC SUBSTRATES USING A STRIPPABLE COATING MASK

Adrian E. Bogard, Marietta, Ohio, and Robert E. DeValeria, Parkersburg, W. Va., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 3, 1972, Ser. No. 215,093
Int. Cl. C23b 5/48; B44d 1/09; C09d 3/48
U.S. Cl. 204—15 4 Claims

A strippable masking or resist coating for preventing metal deposition on a thermoplastic surface is in the form of vinyltoluene-butadiene copolymer applied to the surface. The copolymer is readily removable by means of a solvent which does not dissolve or otherwise affect the thermoplastic substrate.

3,772,162

METHOD OF GALVANICALLY TREATING METALLIC SECTIONAL BODIES

Heinz Grune, Schleifersberg 15, Solingen, Germany

Filed Dec. 1, 1971, Ser. No. 203,577
Claims priority, application Switzerland, Dec. 9, 1970, 18217/70
Int. Cl. C23b 11/00, 9/02, 5/48
U.S. Cl. 204—15 8 Claims

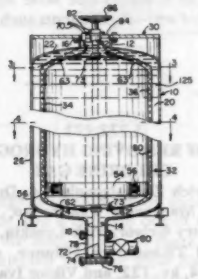
Multipart sectional bodies, of metallic component sections, e.g., hollow sections for window and door frames formed of extruded aluminum sections, are provided with different surface layers, e.g., layers of different color, on the several sections in galvanic treatments by electrically insulating the sections from each other and galvanically treating the body in different baths while connecting only one of the component sections to a source of electric current while immersed in each bath.

3,772,163

ELECTROCHEMICAL PROCESSING OF INNER SURFACES OF LARGE VESSELS

John F. Jumer, 16 W. 131 Timber Trails Dr., Elmhurst, Ill.

Filed Aug. 20, 1971, Ser. No. 173,581
Int. Cl. C23b 5/56, 5/68
U.S. Cl. 204—26 1 Claim



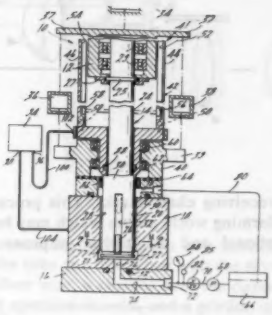
A portable electrode assembly is disclosed for passage through restricted openings and convenient set-up within relatively large vessels for the purpose of electrochemically processing or treating the inner surface of the vessel without removing the vessel from its associated permanent support structure. In preferred embodiments, high density electrolyte solutions are used with electrode assemblies which include means for displacing substantial quantities of the electrolyte while providing support for the electrode elements.

3,772,164

HONING AND PLATING APPARATUS AND METHOD EMBODYING BORE GAUGING MEANS

Myron P. Ellis, Royal Oak, and Karl H. Kaake, Detroit, both of Mich., assignors to Micromatic Industries, Inc., Detroit, Mich.

Filed Aug. 16, 1971, Ser. No. 172,121
Int. Cl. C23b 5/56; B23p 1/00
U.S. Cl. 204—26 9 Claims



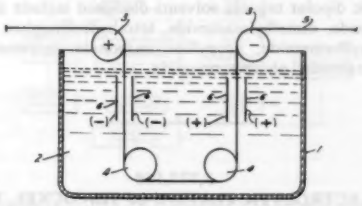
A honing and plating apparatus and method utilizing the pressure of electrolytic sclution to effect gauging of an internal dimension of a workpiece.

3,772,165

METHOD OF TREATING SURFACES OF STEEL PRODUCTS

Hidehisa Yamagishi, Yokohama, and Naoki Gunji, Tokyo, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 775,802, Nov. 14, 1968, abandoned. This application Jan. 10, 1972, Ser. No. 216,450
Claims priority, application Japan, Nov. 22, 1967, 42/74761
Int. Cl. C23b 5/58, 11/00
U.S. Cl. 204—28 10 Claims



Method of treating the surfaces of metal products to provide protection against corrossive attack, comprising the steps of treating such metal products anodically in an aqueous electrolyte consisting of hexavalent chromium ions and borate ions and thereafter treating said metal products cathodically in an aqueous electrolyte consisting of hexavalent chromium ions and borate ions.

3,772,166

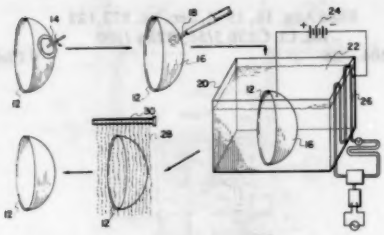
ELECTROLYTIC PROCESS FOR SLATING A CURVILINEAR ALUMINUM WORKPIECE

Jack L. Woods, Ogden, Utah, assignor to Perma-Technological Industries, Inc., Salt Lake City, Utah

Filed July 21, 1972, Ser. No. 274,017
Int. Cl. C23b 9/02
U.S. Cl. 204—33 9 Claims

A process for slating a curvilinear workpiece by electrolytically depositing aluminum oxide on the surface of the work-

piece using a temperature controlled sulfuric acid bath containing a high concentration of aluminum. The process produces a craze-free, slightly abrasive surface useful for



erasably receiving chalk marks. This process is particularly useful in forming world globes which may be used with chalk for educational and illustrative purposes and then easily erased.

3,772,167

ELECTRODEPOSITION OF METALS

Nanabhai Rustomji Bharucha, 4530 Cote des Neige, Apt. 105, Montreal, Quebec, Canada, and John Joseph Bernard Ward, 273 Gipsy Rd., Kent, England

Continuation of Ser. No. 840,823, July 10, 1968, which is a continuation-in-part of Ser. No. 718,234, April 2, 1968. This application Aug. 27, 1971, Ser. No. 175,771

Claims priority, application Great Britain, July 10, 1968, 32,976/68; Apr. 3, 1967, 15,237/67

Int. Cl. C23b *5/32*

U.S. Cl. 204—43 T **9 Claims**

The specification discloses an improved method and an improved electrolyte solution for providing a metal coating on a metallic substrate. The metal coatings are provided by electrodeposition from solutions comprising water, a dipolar organic solvent, metal ions, halide ions, and ammonium ions. Specific dipolar organic solvents disclosed include dimethylsulphoxide, dimethylacetamide, tetrahydrothiophen dioxide, dimethylformamide, propylene carbonate, tetramethylurea and hexamethyl phosphormamide.

3,772,168

ELECTROLYTIC PLATING OF TIN-NICKEL, TIN-COBALT OR TIN-NICKEL-COBALT ON A METAL BASE AND ACID BATH FOR SAID PLATING

Horst Dillenberg, Kaiser-Wilhelm-Allee 26, 56 Wuppertal-Elberfeld, Germany

Filed Aug. 10, 1972, Ser. No. 279,300

Int. Cl. C23b *5/32, 5/38*

U.S. Cl. 204—43 S **6 Claims**

A method for electrolytic plating of tin-nickel, tin-cobalt or tin-nickel-cobalt on a metal base and acid bath for said plating in which a bivalent salt of tin and nickel or tin and cobalt or tin, nickel and cobalt is dissolved in an aqueous acid bath containing an alkali metal or ammonium fluoride or fluoborate which is reacted with at least about 2 volume percent of an amine to form the fluoride or fluoborate amine salt dissolved in said bath. Preferred amines which form salts are petrylene diamine, diethylene triamine, triethylene tetramine, mono, di or tri ethanolamine and pyridine. Heavy, lustrous ductile coatings are deposited from the bath at pH 3.8 – 5.5 under current intensity of 0.1 – 5 amps/dm² and at a temperature of 40°–90°C.

3,772,169

OIL COMPOSITIONS

Norman J. H. Small, Christleton, near Chester, England, and Christopher J. Edhouse, Gresford, near Wrexham, Wales, assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 24, 1972, Ser. No. 229,161

Claims priority, application Great Britain, Mar. 5, 1971, 6,133/71

Int. Cl. C10m *1/28*

U.S. Cl. 252—56 R **7 Claims**

The gelling tendency of lubricating oil solutions containing selectively hydrogenated random styrene/butadiene copolymers is minimized by the presence of a polyester of an olefinically unsaturated acid.

3,772,170

ELECTRODEPOSITION OF CHROMIUM

Nanabhai Rustomji Bharucha, 4530 Cote des Neige, Apt. 105, Montreal, Quebec, Canada

Continuation of Ser. No. 32,402, April 27, 1970, and a continuation-in-part of Ser. No. 679,250, Oct. 30, 1967, abandoned. This application Feb. 16, 1972, Ser. No. 226,859

Claims priority, application Great Britain, Oct. 31, 1966, 48,761/66

Int. Cl. C23b *5/06*

U.S. Cl. 204—51 **5 Claims**

The specification discloses an improved method and electrolyte solution for providing metal coatings on metals. These metals are electrolytically deposited from solutions comprising aprotic dipolar organic solvents which may contain water. The specific dipolar aprotic organic solvents disclosed are dimethylsulphoxide, dimethylacetamide, tetrahydrothiophen dioxide, dimethylformamide, propylene carbonate, tetramethyl urea and hexamethyl phosphoramide.

3,772,171

NOVEL QUICK SETTING INKS

Robert George Savageau, Pompton Lakes, N.J., and Paul John Whyzmuzis, Jamaica, N.Y., assignors to Inmont Corporation, New York, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,466

Int. Cl. B01j *1/10*

U.S. Cl. 204—159.19 **6 Claims**

Novel quick-setting inks which contain photosensitizers and are rapidly cured to a set-off-free state by exposure to ultraviolet light. Use of anti-set-off agents such as powder sprays is thus eliminated.

3,772,172

METHOD OF REMOVING HYDROGEN FROM CHLORINE GAS

Rafael Vachaganovich Zhagatspanian, 4, Dubrovsky per, 23, kv. 10; Leonid Markovich Yakimenko, Abelmanovskaya, ul., 7, kv. 17; Jury Grigorievich Lyaskin, ul. Vavilova, 17, kv. 24; Mikhail Tikhonovich Filippov, 4 Veshnyakovsky proezd, 5, korp. 4, kv. 122, and Viktor Ivanovich Zetkin, ul. Shosse Entuziastov, 121-D, kv. 21, all of Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 78,554, Oct. 6, 1970, abandoned, which is a continuation of Ser. No. 626,697, March 29, 1967, abandoned. This application Oct. 29, 1971, Ser. No. 193,699

Int. Cl. B01j *1/14, 1/10*

U.S. Cl. 204—157.1 H **1 Claim**

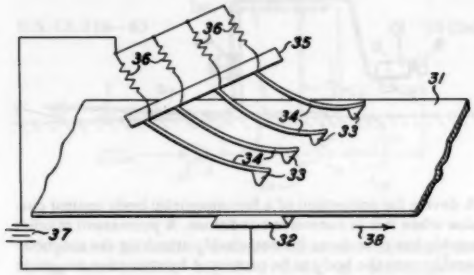
A method of purifying chlorine by the removal of hydrogen which is characterized in that chlorine containing molecular hydrogen is irradiated with electrons having an energy of 0.5 to 5 M.e.v. The hydrogen chloride formed as a result of the reaction of chlorine and hydrogen is removed.

3,772,173

ELECTROCONDUCTIVE PAPER

Seiji Matsumoto, and Satoru Honjo, both of Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 14, 1970, Ser. No. 80,549
Claims priority, application Japan, Dec. 4, 1969, 44/97341
Int. Cl. G01d 5/12
U.S. Cl. 204—165 4 Claims



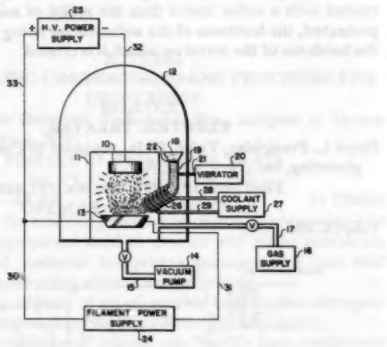
A technique for increasing the electroconductivity of paper is disclosed. The paper substrate is subjected to an electrical discharge which produces localized dielectric breakdown in the thickness direction.

3,772,174

DEPOSITION OF ALLOY FILMS

Talivaldis Spalvins, Parma, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 21, 1971, Ser. No. 136,008
Int. Cl. C23c 15/00
U.S. Cl. 204—192 7 Claims



A glow discharge is established by applying a high voltage between an anode and a cathode object disposed in an inert gas atmosphere. An alloy of two or more metals is vaporized and the vapor injected into the glow discharge causing the alloy to be plated onto the cathode object.

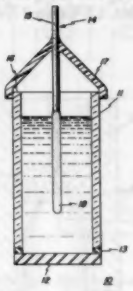
3,772,175

UNIVALENT CATION-SELECTIVE ELECTRODE

Willard T. Grubb, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 28, 1971, Ser. No. 157,166
Int. Cl. G01n 27/46
U.S. Cl. 204—195 M 6 Claims

A univalent cation-selective electrode has an open ended non-ion-selective tube, an ion-selective disc sealed to one open end of the tube, the disc consisting of partially cured silicone rubber containing concentrated ammonium hydroxide, or partially cured, silica-filled silicone rubber containing concentrated ammonium hydroxide, a reference electrode such as a silver wire with a silver chloride portion positioned within



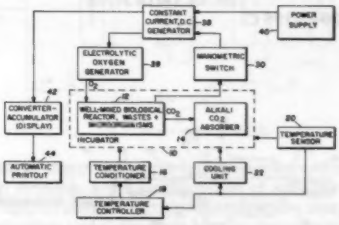
the tube, a reference electrolyte such as a metallic chloride solution within the tube and in contact with the silver chloride portion of the silver wire, a closure over the opposite end of the tube with an aperture therein, and a portion of the silver wire extending through the aperture in the closure to the exterior of the tube.

3,772,176

BIOCHEMICAL OXYGEN DEMAND SYSTEM

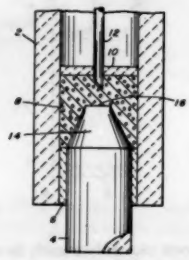
David L. Pippen, Las Cruces, N. Mex., and Gary R. Kramer, College Station, Tex., assignors to Oceanography International Corporation, College Station, Tex.

Filed Dec. 3, 1971, Ser. No. 204,675
Int. Cl. G01n 27/00, 27/42
U.S. Cl. 204—195 B 6 Claims



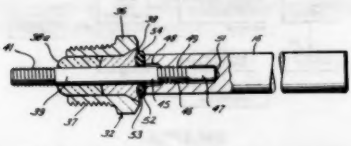
In a biochemical oxygen demand system for continuous determination of oxygen uptake of a large inhomogeneous biological sample, a respirometer continuously replaces oxygen used in the sample by a monometrically triggered electrolysis reaction. The electrolysis cell wherein the reaction takes place includes a monometer controlled switch and an oxygen generator with activating electrodes. As oxygen is chemically or biologically removed from the sample, it is replenished from the air space above the sample. Any oxygen and CO_2 removed from the air space above the sample causes a slight vacuum, thereby activating the monometer controlled switch. This switch actuates a constant current source coupled to the oxygen generator electrodes and oxygen is replenished by electrolysis of a dilute acid solution. A measure of the amount of oxygen replaced is made by actuating a time pulse generator from the monometer controlled switch to produce pulses of constant width at fixed time intervals. These constant width pulses are applied to an impulse counter wherein a measure of the oxygen generated is made in accordance with Faraday's law on electrochemistry.

3,772,177
OXYGEN SENSORS
Robert S. Rittiger, Apollo, and Charles K. Russell, Murrysville, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.
Filed Dec. 23, 1971, Ser. No. 211,444
Int. Cl. G01n 27/46
U.S. Cl. 204—195 S 7 Claims



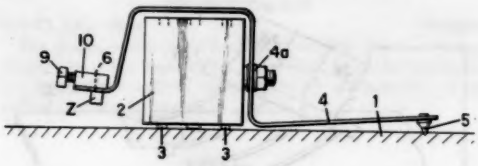
A solid electrolyte galvanic cell with a metal-oxide reference electrode for determining the oxygen content of high temperature fluids has a portion of the electrolyte projecting into the mass of the reference electrode contained inside a quartz tube. The electrolyte is cemented inside the end of the quartz tube.

3,772,178
ELECTRODE FOR CORROSION TEST
Homer M. Wilson, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.
Continuation of Ser. No. 66,950, Aug. 26, 1970, abandoned, which is a division of Ser. No. 764,884, Oct. 3, 1968, Pat. No. 3,558,462. This application Aug. 25, 1972, Ser. No. 283,871
Int. Cl. G01n 27/46
U.S. Cl. 204—195 C 5 Claims



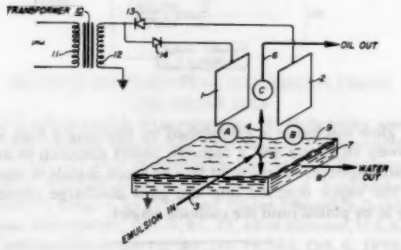
An electrode for use in a corrosion test probe assembly, especially in polarization measurements such as described in U.S. Pat. No. 3,406,101. The electrode comprises a metallic (1,020 mild steel) cylindrical rod. An axial bore extends into one end of the rod which carries an annular end sealing surface arranged to engage a fluid seal with fluid tightness. The bore has an enlarged cylindrical portion adjacent the sealing surface, a reduced diameter threaded portion and a further reduced cylindrical portion which terminates in an abutting surface. The rod has a substantially smooth exterior side and imperforate end surfaces exposed to a corrodant, and these surfaces are prepared so that the actual and mathematically derived surface areas on the rod are substantially identical relative to a certain surface area desired in the polarization measurement with which the rod is to be employed. Each electrode will have identical characteristics in the polarization measurement so electrode replacements do not require instrument recalibration nor aging into identical responses in a corrodant.

3,772,179
CATHODIC PROTECTION DEVICE
Ernst Beer, Zorgvlietstraat 176, The Hague, Netherlands
Division of Ser. No. 825,915, May 19, 1969, abandoned. This application Mar. 17, 1971, Ser. No. 125,393
Int. Cl. C23f 13/00
U.S. Cl. 204—197 6 Claims



A device for protection of a ferromagnetic body against corrosion when it is in corrosive conditions. A permanent magnet assembly has pole shoes for detachably attaching the magnetic assembly onto the body to be protected by attractive magnetic force. Electrically conductive metal supporting means are mounted on the magnetic assembly and are electrically insulated therefrom, and include a spring member having a pointed contacting member adapted to be urged by the spring member towards the body so as to penetrate into the body to establish a low-resistance electrical connection between the supporting means and the body. The metal supporting means further has a mounting structure including a clamp and clamping screw for electrically conductively mounting a sacrificing anode by detachably clamping in the clamp by the clamping screw. An anode supporting rod is embedded in the active material of the sacrificing anode. The clamping screw is pointed so as to penetrate into the anode supporting rod to establish an electrical low-resistance connection between the supporting means and the sacrificing anode. At least the poleshoe surfaces adjacent the body, the pointed contacting member, and the thread and point of the clamping screw are coated with a softer metal than the metal of said body to be protected, the hardness of the softer metal being less than half the hardness of the metal on which it is coated.

3,772,180
ELECTRIC TREATER
Floyd L. Prestridge, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.
Filed Nov. 10, 1971, Ser. No. 197,400
Int. Cl. B01d 13/02; B03c 5/02
U.S. Cl. 204—305 10 Claims



The essential elements of the electrical system of a treater, or dehydrator, of produced oil well fluids are connected and physically oriented as mounted within the shell of the treater. The flow of the fluids is indicated in relation to the elements for coalescence of the water droplets to cause their subsequent gravitation and collection into a body of water below the electrodes. The electrodes are disclosed in planar form and shown as energized periodically by voltage to generate electrostatic fields in which the water droplets coalesce.

3,772,181

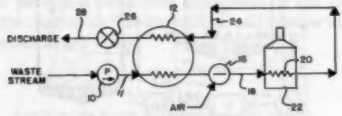
PROCESS FOR TREATING WATER-SOLUBLE ORGANIC WASTES

Edward L. Cole, Fishkill, and Howard V. Hess, Glenham, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 866,215, Oct. 14, 1969, Pat. No. 3,642,620, and a continuation-in-part of Ser. No. 780,080, Nov. 29, 1968, Pat. No. 3,507,788. This application Oct. 27, 1971, Ser. No. 192,843

Int. Cl. C02c *5/04*

U.S. Cl. 210—63 **10 Claims**



A process for treating a waste feed stream containing essentially water-soluble organic wastes, in particular those originating in refinery reservoirs, refinery waste streams, refinery pits, and lube oil additive plants, is described as involving heating the stream under turbulent flow conditions to temperatures of 400° to 700°F and pressures of 300 to 3,100 psi in the presence of air or of oxygen thereby splitting off carbon dioxide. The oxidized waste stream, which has a considerably reduced chemical oxygen demand, is continuously fed to a hot contacting zone and is in heat-exchange relationship with the incoming effluent stream.

ERRATUM

For Class 204—277 see:
Patent No. 3,772,201

3,772,182

ANTIFOULING COMPOSITIONS AND PROCESSES FOR USING THEM

James Nathan Hubbard, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,472

Int. Cl. C10g *9/16*; C10t *1/14*

U.S. Cl. 208—48 AA **11 Claims**

A process for inhibiting fouling in chemical processing and oil refining equipment used to process and refine petroleum derived stock material comprising incorporating into said material an antifouling admixture comprising:

1. A major amount of an oil-soluble basic amino nitrogen-containing addition methacrylate-type of polymer,
2. A minor amount of at least one Schiff's base condensate derived from condensing hydroxylated aromatic aldehyde with aliphatic amines containing two to six carbon atoms, and
3. A minor amount of at least one diarylamine.

3,772,183

REFORMING PETROLEUM HYDROCARBONS WITH GALLIUM-PROMOTED CATALYSTS

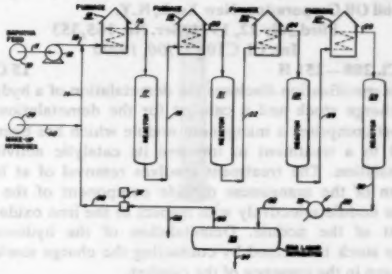
Ralph J. Bertolacini, Chesterton, Ind., and Dae K. Kim, Evanston, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Dec. 17, 1971, Ser. No. 209,303

Int. Cl. C10g *39/00*

U.S. Cl. 208—65 **38 Claims**

There is provided a process for reforming a petroleum hydrocarbon stream, which process comprises contacting said hydrocarbon stream in a first reforming zone under reforming conditions and in the presence of hydrogen with a first reforming catalyst to produce a first reformate and subsequently contacting said first reformate in a second reforming zone under reforming conditions and in the presence of hydrogen with a



second catalyst comprising a hydrogenation component and a small amount of gallium on a solid catalytic support comprising a porous refractory inorganic oxide. The first reforming catalyst may be any suitable reforming catalyst in the art.

3,772,184

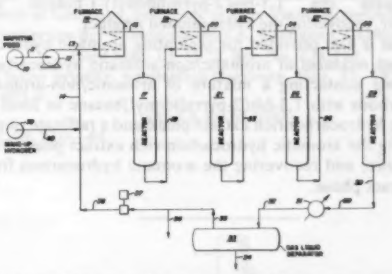
REFORMING PETROLEUM HYDROCARBONS WITH CATALYSTS PROMOTED WITH GALLIUM AND RHENIUM

Ralph J. Bertolacini, Chesterton, Ind., and Dae K. Kim, Evanston, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Dec. 17, 1971, Ser. No. 209,304

Int. Cl. C10g *35/08*, *39/00*; B01j *11/78*, *11/08*

U.S. Cl. 208—65 **44 Claims**



The catalyst comprises a hydrogenation component, a small amount of rhenium, and a small amount of gallium on a solid catalytic support comprising a porous refractory inorganic oxide. The rhenium and the gallium may be present either in the elemental form or as compounds. The preferred hydrogenation component is a Group VIII noble metal and the preferred porous refractory inorganic oxide is a catalytically active alumina.

The reforming process comprises contacting a petroleum hydrocarbon stream in a reforming zone under reforming conditions and in the presence of hydrogen with the above-described catalyst. In one embodiment, the process comprises contacting a partially-reformed hydrocarbon stream in a reforming zone under reforming conditions and in the presence of hydrogen with the above catalyst. In another embodiment, the process comprises contacting a naphtha in a reforming zone under reforming conditions and in the presence of hydrogen with the above catalyst. In a third embodiment, the process comprises contacting the petroleum hydrocarbon stream in a first reforming zone under reforming conditions and in the presence of hydrogen with a first reforming catalyst to produce a first reformate and subsequently contacting the first reformate in a second reforming zone under reforming conditions and in the presence of hydrogen with a second reforming catalyst, said second reforming catalyst being the catalyst described in the preceding paragraph.

3,772,185

CATALYST FOR THE DEMETALATION OF A HYDROCARBON CHARGE STOCK

Clarence D. Chang, Princeton; Paul A. Naro, Trenton, both of N.J., and Anthony J. Silvestri, Morriville, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed July 22, 1971, Ser. No. 165,353
Int. Cl. C10g *17/00, 19/00*
U.S. Cl. 208—251 H **15 Claims**

This specification discloses the demetalation of a hydrocarbon charge stock and a catalyst for the demetalation. The catalyst comprises a manganese nodule which has been subjected to a treatment to improve its catalytic activity for demetalation. The treatment involves removal of at least a portion of the manganese dioxide component of the manganese nodule selectively with respect to the iron oxide component of the nodule. Demetalation of the hydrocarbon charge stock is effected by contacting the charge stock with hydrogen in the presence of the catalyst.

3,772,186

USE OF 1,3-BIS(2-PYRROLIDONYL) BUTANE AS A SELECTIVE SOLVENT FOR THE RECOVERY OF AROMATIC HYDROCARBONS

Eugene V. Hort, Piscataway, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Aug. 16, 1971, Ser. No. 172,198
Int. Cl. C10g *21/20*
U.S. Cl. 208—326 **3 Claims**

Process for the preparation of 1,3-bis(2-pyrrolidonyl) butane is provided comprising heating 1,3-bis(2-pyrrolidonyl)-1-butene to a temperature above the melting point thereof under hydrogen pressure in the presence of a hydrogenation catalyst for a sufficient period of time to substantially hydrogenate the 1,3-bis(2-pyrrolidonyl)-1-butene and thereafter, recovering the hydrogenated product.

Process is also provided for separating aromatic hydrocarbons from mixtures of aromatic/non-aromatic hydrocarbons comprising contacting a mixture of aromatic/non-aromatic hydrocarbons with 1,3-bis(2-pyrrolidonyl)butane to form an aromatic hydrocarbonrich extract phase and a raffinate phase, separating the aromatic hydrocarbon-rich extract phase from the mixture, and recovering the aromatic hydrocarbon from said extract phase.

ERRATUM

For Class 210—63 see:
Patent No. 3,772,181

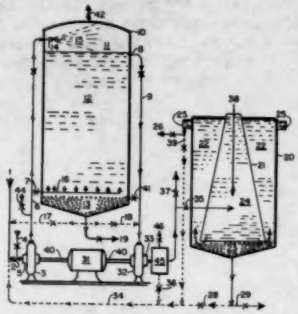
3,772,187

SEWAGE TREATMENT PROCESS

Donald F. Othmer, 333 Jay St., Brooklyn, N.Y.

Filed July 14, 1971, Ser. No. 162,402
Int. Cl. C02c *1/06*
U.S. Cl. 210—7 **27 Claims**

Domestic sewage and other polluted waters may be treated under a pressure of ½ to 5 atmospheres gauge or more with dissolved oxygen, or air, to supply the BOD. The oxygen-containing gas is drawn into the suction of a feed and recycle pump which agitates the liquid-gas mixture, and increases gas solubilization as it is being compressed. Simultaneously, any solids which are present are comminuted in being pumped to the pressure oxidation tank. The higher than atmospheric pressure increases oxygen solubility, concentration, and hence chemical or biochemical reactivity. Thus, a much smaller residence time and vessel is required, the polluted water is withdrawn and depressurized to atmospheric pressure at which pressure some of the dissolved oxygen and other gases are released due to lower solubility, and vented. Most of the liquid after depressurization is recycled to the influent stream for repressurization and additional oxygen dissolution. The recycle may amount to 2 to 50 times, and some sludge ob-



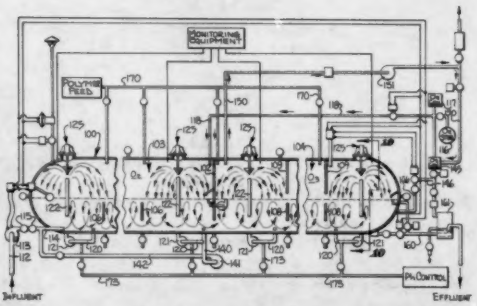
tained may also be recycled. A water turbine may recover some of the mechanical energy used by the pump. The process may be used by itself or as an adjunct to other processes for treating polluted waters, and also for the oxidation of sludge.

3,772,188

SEWAGE TREATMENT APPARATUS AND METHOD

Richard N. Edwards, 409 Vernon Ter., Raleigh, N.C.

Filed Feb. 28, 1972, Ser. No. 229,745
Int. Cl. C02c *1/10*
U.S. Cl. 210—15 **20 Claims**



An apparatus and method for the treatment of sewage and waste comprising an enclosed pressurized vessel for receiving transported sewage and for treating the same to provide biological and chemical oxidation and sterilization and undesirable color, taste, odor, phenol, cyanide and phosphate reduction and the combination therewith of transporting, from a point of collection to the point of treatment, liquid sewage and waste which has tendencies to become septic and build up undesirable chemicals, gases, odors, bacteria and the like during the transportation due to the lack of proper oxygen content therein and devices positioned directly in the sewage as it is transported for supplying oxygen thereto to prevent the same from becoming septic, control the build-up of the aforesaid undesirables and stimulate growth of desirable aerobic bacteria. The preferred pressurized vessel receives high purity oxygen as O_2 or O_3 in an upper portion thereof to define a pressurized gaseous oxygen atmosphere and includes a device for injecting a stream of the sewage into the gaseous atmosphere and against a comminutor device for breaking the sewage into small particles to allow the sewage and waste to quickly absorb the oxygen under pressure to provide rapid biological and chemical oxidation and ozone sterilization and reduce the aforesaid undesirables.

3,772,189

IODINE TREATED ACTIVATED CARBON AND PROCESS OF TREATING CONTAMINATED WATER THEREWITH

Edward G. Kreusch, Arlington Heights, and Farouk F. Husseini, Mundelein, both of Ill., assignors to Culligan Inc., Northbrook, Ill.

Continuation-in-part of Ser. No. 95,328, Dec. 4, 1970, abandoned. This application Jan. 27, 1972, Ser. No. 221,436

Int. Cl. C02b *1/36*

U.S. Cl. 210—40 2 Claims

A process of treating water with activated carbon which has been made bacteriostatic by the homogeneous absorption of iodine thereby. The activated carbon is treated with an iodine solution to provide a reversible absorption of the elemental iodine by the carbon so that the carbon will release the iodine to treat contaminated water.

3,772,190

METHOD FOR PURIFYING WATER

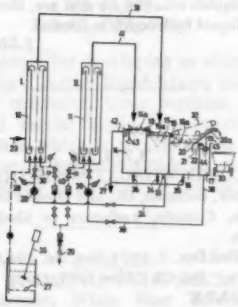
Rolf Eisenmann, Stuttgart-Weilimdorf, Germany, assignor to Otto Durr K.G., Stuttgart-Zuffenhausen, Germany

Filed Oct. 8, 1971, Ser. No. 187,752

Claims priority, application Germany, Oct. 15, 1970, P 20 50 635.8

Int. Cl. B03d *1/00*

U.S. Cl. 210—44 6 Claims



A method for purifying polluted water by adding compressed air and intimately mixing it by circulation in a first operating stage so as to form a foamy mixture, then allowing the foam to float to the surface of the water and removing the foam and thereby partly cleaning the water, then subjecting the partly clean water to a second operating stage in which compressed air is again added to the water and the mixture is again thoroughly circulated and intimately mixed to produce a foam, and the foam is again allowed to float to the surface of the water, and then removing all of the foam from the cleaned water.

3,772,191

METHOD OF DIGESTING AND FURTHER PROCESSING FRESH SEWAGE SLUDGE OR SOPROPEL

Werner Thorn, Kuchucksberg 13, Lutjensee, Germany

Filed Apr. 26, 1971, Ser. No. 137,536

Claims priority, application Germany, Apr. 25, 1970, P 20 20 304.7

Int. Cl. C02c *3/00*

U.S. Cl. 210—44 9 Claims

The method of treating sewage wherein the sludge is acidified with a mineral acid to a pH value just below 5 and then the pH value is adjusted to the isoelectrical range of the high molecular sludge substances by addition of hydrochloric acid. The floated hydrophobic substances are removed from the surface and the precipitated sludge substances are separated from the supernatent liquid. The precipitated sludge is mixed with calcium hydroxyde or calcium oxyde and

dehydrated in a filter presse to a water content of 50 to 30 percent by weight. This process is less expensive than prior art processes and allows a faster sludge dehydration than up to now.

3,772,192

METHOD AND APPARATUS FOR PURIFYING SEA WATER

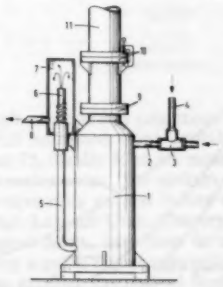
Guido Huckstedt, Starnberg, and Hermann Jakobs, Seewiesen, both of Germany, assignors to Max-Planck-Gesellschaft, zur Forderung der Wissenchaften e.v., Gottingen, Germany

Filed Mar. 13, 1972, Ser. No. 234,161

Claims priority, application Germany, Mar. 15, 1971, P 21 12 401.6

Int. Cl. B03d *1/00*

U.S. Cl. 210—44 9 Claims



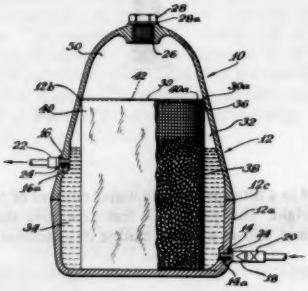
Sea water contaminated with suspended organic matter and the like can be purified by expanding a mixture of the water with air so as to generate a froth, and letting the froth carrying the impurities overflow from a tubular riser attached to the expansion vessel while purified water is drawn off from the bottom of the vessel. The froth is stabilized by maintaining a layer of more alkaline liquid on the inner wall of the riser. The apparatus employed uses a rotating nozzle for continuously rinsing the wall of the riser with a liquid more alkaline than the froth, such as the original sea water prior to its being mixed with air.

3,772,193

DEVICE AND METHOD FOR INTRODUCING A CHEMICAL INTO A LIQUID

Joseph R. Nelli, Gastonia, and Luther C. Mitchem, Lowell, both of N.C., assignors to First National City Bank, New York, N.Y.

Filed Nov. 8, 1971, Ser. No. 196,359
Int. Cl. B01d *33/38*; B01j *4/02*
U.S. Cl. 210—62 **10 Claims**



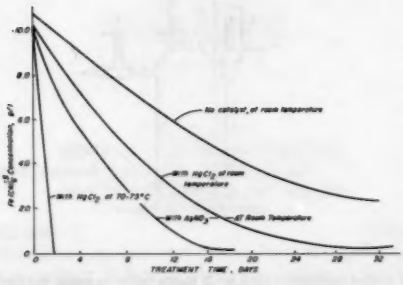
A device for introducing a chemical into a liquid to provide a preselected concentration of the chemical in the liquid. The device utilizes a limitedly permeable barrier to separate the liquid and the chemical to be introduced into the liquid. By proper regulation of the flow of a liquid through the device, a preselected concentration of the chemical can be continuously maintained in the liquid.

3,772,194

SILVER CATALYZED OXIDATION OF COMPLEX METAL CYANIDES

Harry C. Baden, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 21, 1972, Ser. No. 265,067
Int. Cl. C02b *1/36*
U.S. Cl. 210—62 **13 Claims**



A method of conditioning waste containing complex cyanide compounds and oxidizing at least the complex iron cyanides, e.g. hexacyanoferrates, comprising chlorinating the waste in the presence of a silver ion catalyst (present as a soluble silver salt such as $AgNO_3$, $AgCl_2$, etc.) to convert the cyanide to a non-toxic compound is described. Chlorination is preferably carried out at a temperature of between about 25° and 68° C in an alkaline medium, using an excess of free chlorine or hypochlorite as the chlorinating agent.

ERRATUM

For Class 252—56 R see:
Patent No. 3,772,169

3,772,195

FIRE EXTINGUISHING COMPOSITION COMPRISING A FLUOROALIPHATIC SURFACTANT FLUORINE-FREE SURFACTANT

Vernon L. Francen, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 840,102, June 12, 1969, Pat. No. 3,562,156. This application Feb. 5, 1971, Ser. No. 113,022The portion of the term of this patent subsequent to Feb. 19, 1988, has been disclaimed.
Int. Cl. A62c *1/12*; A62d *1/00*
U.S. Cl. 252—8.05 **6 Claims**

Compositions are disclosed which form tough, durable, rapidly-forming and spreading films on the surface of hydrocarbon liquids comprising in combination a water-soluble fluoroaliphatic surfactant and a water-soluble synthetic imputrescible hydrocarbon-congruous organic fluorine-free surfactant and water. The films formed by these compositions are especially effective in suppressing the vaporization of hydrocarbon liquids into the air and are, therefore, useful for extinguishing liquid hydrocarbon fires.

3,772,196

LUBRICATING COMPOSITIONS

David J. St. Clair, Bethalto, Ill., and Donald D. Evans, Burlington, Ontario, Canada, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 3, 1971, Ser. No. 204,668
Int. Cl. C10m *1/48, 1/16*
U.S. Cl. 252—32.7 E **9 Claims**

Lubricating oil compositions for internal combustion engines having unexpectedly wide temperature operating characteristics, contain a combination of 2-block copolymer comprising a first polymer block of an alkenyl arene, e.g., styrene and a second essentially completely hydrogenated polymer block of isoprene and certain pour point depressants in a lubricant base stock having a viscosity index of at least 85. The compositions have excellent shear stability and can be formulated to pass a number of the ASTM and SAE engine oil performance and engine service classifications.

3,772,197

LUBRICATING OIL COMPOSITION

Daniel Milsom, Hightstown, N.J., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed Dec. 4, 1970, Ser. No. 95,357
Int. Cl. C10m *1/40*
U.S. Cl. 252—33.2 **13 Claims**

Antioxidant additives for lubricating oils and lubricating oil compositions containing said antioxidant additives. The stability of lubricating oil compositions toward oxidizing conditions is markedly improved when an antioxidant additive comprising a mixture of a metal dialkyldithiocarbamate and a Group IIa metal sulfonate is incorporated therein. The preferred additives comprise mixtures of cadmium diamyldithiocarbamate or antimony dialkyldithiocarbamate with a barium ulfonate or a calcium sulfonate.

3,772,198
METHOD FOR PREPARING OVERBASED OIL SOLUBLE COMPOSITIONS

Vincent J. Cease, Aston, and Samuel C. Thomas, Jr., Prospect Park, Pa., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed June 7, 1971, Ser. No. 150,732
Int. Cl. C10m *1/24, 1/40, 1/46*
U.S. Cl. 252—32.7 HC 23 Claims

An overbasing process to produce alkaline earth metal compounds in lubricating oil which comprises:

(a) admix acid (sulfonic, carboxylic, phosphorus sulfide-treated olefins) with ammonium ions to neutralize;
(b) heat to from about 25° C. to about 80° C.;
(c) holding at this temperature and adding water and alkaline earth metal alkoxide-carbonate complex;
(d) heat to from about 125° C. to about 160° C. to remove volatiles; and
(e) strip with inert gas.

3,772,199
LIQUID DEVELOPER USED FOR ELECTRO-PHOTOGRAPHY

Yasuo Tamai and Sadao Osawa, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Kanagawa, Japan

No Drawing. Filed Nov. 11, 1971, Ser. No. 197,961
Claims priority, application Japan, Nov. 13, 1970, 45/99,982
Int. Cl. C03g *9/04*
U.S. Cl. 252—62.1 10 Claims

A liquid developer for developing an electrostatic latent image comprising a carrier liquid having more than $10^{11}\Omega$ cm. of specific resistance, toner particles which are insoluble in said carrier liquid, 1-hydroxyalkyl-2-higher alkyl-2-imidazoline which is soluble in the carrier liquid and a copolymer of half-alkylamide of maleic acid and diisobutylene which is soluble in the carrier liquid is disclosed.

3,772,200
METHOD OF TAGGING WITH MICROPARTICLES

Richard G. Livesay, White Bear Township, Ramsey County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 30, 1971, Ser. No. 139,012
Int. Cl. C09k *3/00*; G21h *5/02*
U.S. Cl. 252—301.1 R 11 Claims

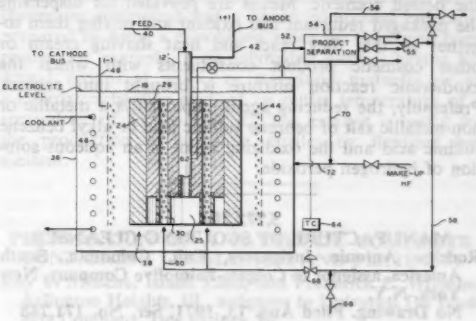
Method of tagging individual units of production of a substance by providing an inventory of batches of microparticles, each batch being uniformly coded by incorporation in the microparticles a selected combination of tagging elements in uniform amounts of at least 0.1% of the total weight of the microparticle. Uniquely coded microparticles are incorporated into each unit of production of the substance whereby recovery of a single microparticle would be sufficient to identify the unit of production of the substance.

3,772,201
ELECTRODE FOR ELECTROLYTIC CONVERSION CELLS INCLUDING PASSAGE MEANS IN THE ELECTRODE FOR ELECTROLYTE FLOW THROUGH THE ELECTRODE

King L. Mills, Bartlesville, Okla., assignor to Phillips Petroleum Company

Original application Mar. 2, 1970, Ser. No. 15,389, now Patent No. 3,663,380. Divided and this application Dec. 27, 1971, Ser. No. 211,895
Int. Cl. B01k *3/04, 3/08*
U.S. Cl. 204—277 13 Claims

An electrode employed in an electrolytic cell is provided with at least one passageway extending therethrough, preferably in a generally vertical direction. Electrolyte circulates through said passageway and cools said electrode. If desired, circulation of said electrolyte can

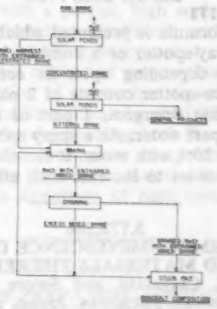


be enhanced by introducing an inert gas into said passageway.

3,772,202
MOIST ROAD SALT COMPOSITION AND PROCESS FOR MAKING THE SAME

Ulrich E. G. Neitzel, Heringen (Werra), Germany, and Frederick J. Andreasen, Brigham City, Utah, assignors to Irving Trust Company, as trustee

Filed June 28, 1971, Ser. No. 157,147
Int. Cl. C09k *3/18*
U.S. Cl. 252—70 8 Claims



A moist road salt composition comprises sodium chloride moistened with entrained brine containing between about 40 and about 75, ideally 45 to 60, moles magnesium chloride per 1000 moles water. The sodium chloride may be obtained by evaporating natural brines such as those from the Great Salt Lake of Utah. The crystal crop, together with entrained brine, may then be mixed with a similar brine having a much higher concentration of magnesium chloride to produce the desired final composition of the brine entrained by the crystal crop.

3,772,203
EXOTHERMIC COSMETIC

Frederick William Gray, Summit, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 848,335, Aug. 7, 1969. This application July 26, 1972, Ser. No. 275,381
Int. Cl. C11d *17/04*
U.S. Cl. 252—90 14 Claims

A packaged self-heating cosmetic, such as a shaving cream, includes separate exothermically reactive sulfinic

acid or sulfinate reductant and an oxidant, which converts the reductant to the corresponding sulfonic acid or sulfonate, which serves as a surface-active ingredient of the heated cosmetic. Means are provided for dispensing the packaged reductant and oxidant and mixing them together so that they react and heat shaving cream or other cosmetic product constituents with which the exothermic reaction mixture is brought into contact. Preferably, the reducing agent employed is a metallic or non-metallic salt of benzene sulfinic acid or alkyl benzene sulfinic acid and the oxidizing agent is an aqueous solution of hydrogen peroxide.

3,772,204

MANUFACTURE OF SCOURING CLEANSER

Rodrigo Antonio Insignares, Cali, Colombia, South America, assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,748
Int. Cl. C11d *7/38*
U.S. Cl. 252—99 **11 Claims**

Scouring cleansers are made by neutralization of a detergent acid with an excess of calcium carbonate, whereby a calcium-detergent salt is produced together with calcium carbonate scouring material. Such cleansers have improved foaming power and bleaches present in them are more stable on storage than in similar products containing a corresponding sodium-detergent salt.

3,772,205

CLEANING AGENT FOR TEXTILES

Albert George Dongas, Sr., 140 Carlisle St., Wilkes-Barre, Pa. 18702

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,359
Int. Cl. C11d *7/50*
U.S. Cl. 252—171 **8 Claims**

A cleaning formula is presented which is suitable as a pre-spotter, spray-spotter or a combined spotter and dry cleaning agent depending upon its concentration. The concentrated pre-spotter consists of 2 parts of a charged type dry cleaning detergent, 1 part of a paint remover mixture and 1 part water. As a spray spotter the formula is diluted up to 20:1 with water. It can also be mixed with other stain removers to increase their effectiveness.

3,772,206

RADIOTHERMOLUMINESCENCE DOSIMETERS AND MATERIALS THEREFOR

Teiichi Hitomi, Chigasaki, and Satoru Nishikawa and Hitoshi Sakamoto, Hiratsuka, Japan, assignors to Dai Nippon Toryo Kabushiki Kaisha, Osaki-shi, Japan

Filed Dec. 30, 1971, Ser. No. 213,950
Claims priority, application Japan, Dec. 31, 1970, 46/123,314
Int. Cl. C09k *1/66*; G01t *1/11*
U.S. Cl. 252—301.4 R **14 Claims**

A thermoluminescent material which comprises a complex oxide host crystal of magnesium oxide-boron oxide and terbium and/or dysprosium as an activator element incorporated therein shows strong thermoluminescence after exposure to ionizing radiations and thus is useful as a luminescent materials for radiothermoluminescence dosimeters.

3,772,207

PROCESS AND COMPOSITIONS FOR CONTROLLING FOAMING IN AQUEOUS SYSTEMS

Raymond J. Michalski, Riverdale, and Chappelle C. Cochrane, Maywood, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Sept. 9, 1971, Ser. No. 179,161
Int. Cl. B01d *17/00*
U.S. Cl. 252—321 **11 Claims**

Compositions are provided containing synergistic amounts of both a long chain hydrocarbon substituted amide which is water insoluble and a water insoluble saponified copolymer of ethylene and polyvinyl acetate, homogeneously dispersed in a water insoluble hydrocarbon oil in which said amide and said copolymer are insoluble, preferably together with a surface active spreading agent, which are useful in controlling foams in aqueous systems having a pH of 1 to 7.5, especially sulfite wood pulp liquor.

3,772,208

CORROSION INHIBITOR CONTAINING THE ETHYNYLATION REACTION PRODUCT OF BUTYRALDEHYDE WITH ACETYLENE

Robert J. Tedeschi, Whitehouse Station, and Paul W. Natali, Middletown, N.J., assignors to Air Products and Chemicals, Inc.

No Drawing. Continuation-in-part of abandoned application Ser. No. 789,014, Dec. 31, 1968. This application Aug. 31, 1971, Ser. No. 176,706
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. C11d *7/08*; C23f *11/04, 11/12*
U.S. Cl. 252—396 **3 Claims**

A corrosion inhibitor, having particular utility in connection with aqueous solutions of mineral acids, comprises the reaction product obtained by the ethynylation of butyraldehyde with acetylene. This reaction product is a complex material which contains, inter alia, 1-hexyn-3-ol and 5-decyn-4,7-diol.

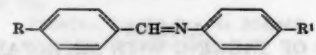
3,772,209

LIQUID CRYSTAL COMPOSITIONS

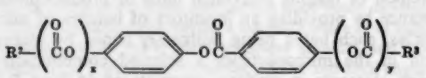
Donald C. Batesky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Jan. 21, 1972, Ser. No. 219,901
Int. Cl. G01n *33/00*
U.S. Cl. 252—408 **17 Claims**

A nematic liquid crystal composition having a very broad mesophase comprising a mixture of at least two compounds of the formula:



wherein each R and R^1 are radicals selected from the group consisting of a saturated alkoxy radical and an alkyl radical each having from 1 to 9 carbon atoms and only one of each R and R^1 is alkyl, and at least one compound of the formula:



wherein R^2 and R^3 are saturated alkoxy radicals of from 1 to 9 carbon atoms, one of *x* and *y* is 0 and the other is 1.

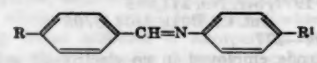
3,772,210

LIQUID CRYSTAL COMPOSITIONS

Marcello Lodolini, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

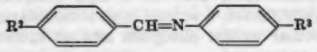
No Drawing. Continuation-in-part of abandoned application Ser. No. 215,090, Jan. 3, 1972. This application Feb. 14, 1972, Ser. No. 226,312
Int. Cl. G01n *31/00*
U.S. Cl. 252—408 **11 Claims**

A nematic liquid crystal composition having a very broad mesophase comprising a mixture of at least one compound of the formula:

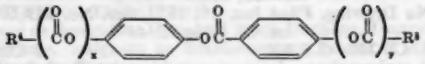


wherein R and R^1 are radicals selected from the group consisting of a saturated alkoxy radical and an alkyl

radical, each having from 1 to 9 carbon atoms and only one of R and R^1 is alkyl; at least one compound of the formula:



wherein R^2 and R^3 are radicals selected from the group consisting of a saturated alkoxy radical having from 1 to 9 carbon atoms and a saturated acyloxy radical having from 2 to 5 carbon atoms, and only one of R^2 and R^3 is an alkoxy radical; and at least one compound of the formula:



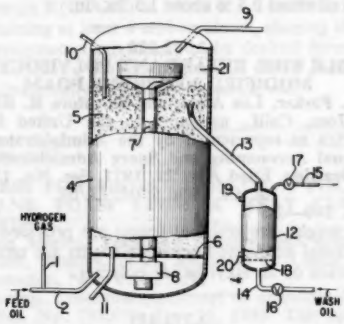
wherein R^4 and R^5 are saturated alkoxy radicals of from 1 to 9 carbon atoms, one of x and y is 0 and the other is 1.

3,772,211

PROCESS FOR SEMI-CONTINUOUS REGENERATION OF CATALYST WITH WASH LIQUID IN A CLOSED SYSTEM

William R. Mounce, Cranbury, N.J., assignor to Cities Service Research and Development Company, New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,414
Int. Cl. B01j *11/02*
U.S. Cl. 252—414 **10 Claims**



A process for the semi-continuous regeneration of the poisoned catalyst in a closed, usually high pressure system. A portion of the catalyst which is maintained in an ebullated bed in a reactor, usually under high pressure, is allowed to flow by gravity to a catalyst wash vessel which is under essentially the same pressure as the reactor. A wash liquid is flowed upward through the catalyst in the wash vessel to wash deactivating material from the catalyst. On completion of catalyst washing, flow of the wash liquid is increased sufficiently to wash at least a portion of regenerated catalyst back into the reaction. The invention finds particular utility in a residual oil hydrocracking hydrodesulfurization process.

3,772,212

PROCESS FOR PREPARING FLUIDIZED BED CATALYST FOR PRODUCTION OF AROMATIC NITRILES

Masao Saito and Takashi Okawa, Niigata, Japan, assignors to Mitsubishi Gas-Chemical Company, Inc., Tokyo, Japan

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,755
Claims priority, application Japan, Dec. 29, 1970, 46/125,671
Int. Cl. B01j *11/82*
U.S. Cl. 252—432 **10 Claims**

Fluidized bed catalyst having an atomic ratio of V:Cr:B of 1:0.5–2.0:0.1–1.2, a total amount of their oxides carried on the catalyst being 20 to 80% by weight, based on the weight of the catalyst and a closed bulk density of 0.85 to 1.20 g./ml. is prepared by spray-drying a silica sol slurry containing a vanadium compound, a chromium compound and a boron compound especially prepared by using a dissolution agent for the boron compound, for example, a cis-polyhydric alcohol having hydroxyl groups at an α- or β-position mutually or an α-hydroxycarboxylic acid, at an outlet temperature of a spray-drier of 85° to 160° C. The catalyst is useful for the production of aromatic nitriles by fluidized bed method.

3,772,213

PREPARATION OF A CATALYTIC COMPOSITE CONTAINING GERMANIUM AND PLATINUM

Roy T. Mitsche, Island Lake, and Frederick C. Wilhelm, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 861,456, Sept. 26, 1969. This application Sept. 4, 1970, Ser. No. 69,895
Int. Cl. B01j *11/12*
U.S. Cl. 252—466 PT **14 Claims**

A platinum group component and a germanium component are uniformly dispersed throughout a porous high surface area carrier material by the steps of: first, mixing germanium tetrachloride with anhydrous alcohol to form a solution thereof; second, treating the resulting solution to establish an equilibrium condition therein; third, admixing the resulting treated solution with an aqueous solution of a water-soluble, decomposable compound of a platinum group metal to form a precipitate-free impregnation solution; fourth, contacting the resulting impregnation solution with a porous, high surface area carrier material at impregnation conditions; and finally drying and calcining the resulting impregnated carrier material. Key feature of this method of preparation involves treatment of the solution of germanium tetrachloride and alcohol to insure the formation of a precipitate-free impregnation solution, thereby enabling both the platinum group component and the germanium component to be simultaneously added to the carrier material in a manner providing a uniform dispersion of both components in the carrier material.

3,772,214

METHOD OF PREPARING FIBROUS COPPER OXIDE CATALYST

Teruyuki Nakamoto, Yoshioki Shingo, Mamoru Takeuchi, and Masaru Ogawa, Tokyo, Japan, assignors to Fujikura Densen Co., Ltd.

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,392
Claims priority, application Japan, Dec. 29, 1970, 46/126,734
Int. Cl. B01j *11/06, 11/08, 11/84*
U.S. Cl. 252—447 **11 Claims**

A fibrous copper oxide catalyst for rendering carbon monoxide and residual hydrocarbons contained in the exhaust gas of internal combustion engines harmless is manufactured by the steps of preparing a web or the like made of a fine wire of an iron base heat resistant alloy containing nickel and/or chromium, applying a mixture consisting of copper oxide, metal halide and carbonaceous substance upon the said web to form a layer of the mixture having a uniform thickness, heating the resulting assembly in non-oxidizing atmosphere at a temperature of about 750° C. to form fibrous copper or fibrous copper containing a small quantity of another metal, the fibrous copper being firmly bonded to the said web, and oxidizing the resultant composite body to form a fibrous copper oxide or an oxide of a fibrous copper base alloy.

3,772,215
WATER SOLUBLE ENTRAPPING OF A FRAGRANCE

Francis E. Gould, Princeton, and Thomas H. Shepherd, Hopewell, N.J., assignors to National Patent Development Corporation, New York, N.Y.

No Drawing. Original applications June 13, 1969, Ser. No. 833,182, now Patent No. 3,576,760, and Sept. 9, 1970, Ser. No. 70,939, now Patent No. 3,681,248. Divided and this application Feb. 18, 1972, Ser. No. 227,644
Int. Cl. A61k 7/00; C11b 9/00
U.S. Cl. 252—522 **4 Claims**

Fragrant materials are entrapped in water soluble hydroxyalkyl acrylate or methacrylate polymers to provide ready sources of the material by the deletion of water. Thus, there can be entrapped flavoring agents and fragrances.

3,772,216
POLYIMIDE FOAM FOR THERMAL INSULATION AND FIRE PROTECTION

Robert W. Rosser, San Jose, Calif., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

No Drawing. Filed Nov. 12, 1971, Ser. No. 198,472
Int. Cl. C08g 33/02, 53/10, 53/08
U.S. Cl. 260—2.5 AM **12 Claims**

In the preparation of polyimide foams by the reaction of polyisocyanates and polyfunctional aromatic acid derivatives, flame retardant foamed products of improved cell quality, friability, and resiliency are obtained by conducting the reaction in the presence of an alkanolamine such as 1-hydroxyethyl-2-heptadecenyl glyoxalidine.

Another aspect of the invention resides in the finding that polyimide foams of reproducible density above 1 lb./ft.^{3} and below 6 lbs./ft.^{3} can be obtained by employing in the reaction at least 2% by weight of siloxane-glycol copolymer as a surfactant which acts as a specific density control agent.

A further feature of the invention is the production of polyimide foams into which reinforcing fibers such as silicon dioxide and carbon fibers may be incorporated.

3,772,217
CARBODIIMIDE FOAMS PREPARED FROM AMINE-DERIVED ISOCYANATE-TERMINATED QUASI-PREPOLYMERS

Peter T. Kan, Plymouth, Moses Cenker, Trenton, and T. V. Lakshmi Narayan, Riverview, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,304
Int. Cl. C08g 33/02, 22/02, 53/08
U.S. Cl. 260—2.5 BF **5 Claims**

Rigid foams characterized by carbodiimide linkages having minor amounts of urea and biuret groups incorporated therewith exhibit reduced brittleness and improved flexibility without any loss of flame retardancy when prepared from amine-derived isocyanate-terminated quasi-prepolymers.

3,772,218
FLEXIBLE, OPEN-CELL, NON-DISCOLORING POLYURETHANE FOAM

Roland J. Lamplugh, Chester, and Frederick W. Meisel, Jr., Media, Pa., assignors to Scott Paper Company, Delaware County, Pa.

No Drawing. Filed Oct. 12, 1971, Ser. No. 188,615
Int. Cl. C08g 22/44
U.S. Cl. 260—2.5 BB **15 Claims**

Flexible, open-cell, polyurethane foams are prepared by reacting an aliphatic, or an aliphatic-like, organic polyisocyanate, such as dimethyl benzene ω,ω'-diisocyanate (xylylene diisocyanate) with an active-hydrogen-containing polyol in the presence of a mixed catalyst system comprising an alkanolamine, a stannous salt of a carboxylic acid, and a stannic salt of a carboxylic acid. Discoloration of the resulting foams can be prevented by including in the reaction mixture a mixed stabilizer system comprising a primary antioxidant, such as a high molecular weight hindered polyphenol, a second high antioxidant, such as a high molecular weight phosphite and an ultraviolet light absorbing compound.

3,772,219
FLEXIBLE POLYURETHANE FOAM COMPOSITION

Irving L. Schwarz, 42 Nickerson Road, Newton, Mass. 02158

No Drawing. Filed Jan. 19, 1972, Ser. No. 219,163
Int. Cl. C08g 22/44
U.S. Cl. 260—2.5 AK **2 Claims**

A polyurethane foam composition is afforded which may economically be used as a substitute for polyurethane foam scrap in the manufacture of rebonded polyurethane foam products. The polyurthane foam composition has uniformly dispersed therein from about 100% to about 200%, based on the weight of the polyol content of the foamed polyurethane, of pulverulent limestone, the average particle diameter of which is from about 5 to about 100 microns. The resulting foam composition conforms to that which is required for the aforesaid purpose in that it has a density of from about 2.25 to about 3.75 lbs./cu. ft. combined with an indentation load deflection value of about 55 to about 100 lbs. It also has a tensile strength of about 8 to about 14 lbs./sq. in. and a tear strength of about 0.5 to about 1.5 lbs./in.

3,772,220
FLEXIBLE FIRE RETARDANT POLYISOCYANATE MODIFIED NEOPRENE FOAM

John A. Parker, Los Altos, and Salvatore R. Riccitiello, San Jose, Calif., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

No Drawing. Filed Apr. 21, 1971, Ser. No. 136,253
Int. Cl. C08d 9/08, 13/08
U.S. Cl. 260—2.5 L **3 Claims**

Lightweight, fire resistant foams are provided wherein conventional neoprene-isocyanate foams are modified by the addition of an alkyl halide polymer.

3,772,221
PREPARATION OF POLYURETHANE FOAMS AND MICROCELLULAR ELASTOMERS WITH INTEGRAL SKINS USING A COMBINATION OF TETRAALKYLGUANIDINE AND AN ORGANOMERCURY COMPOUND

Fritz Hostettler, Freehold, N.J., and George W. Huffman, Crystal Lake, and Norman E. Rustad, Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed Jan. 12, 1972, Ser. No. 217,273
Int. Cl. C08g 22/44
U.S. Cl. 260—2.5 AZ **6 Claims**

This invention relates to a method for preparing polyurethane foams and microcellular elastomers with integral skins which are substantially non-porous, said method comprising contacting a mixture of specified polyols with a specified quasi-prepolymer of toluene diisocyanate in the presence of a blowing agent and a catalyst system consisting of a tetraalkylguanidine and an organomercury compound.

3,772,222
HIGHLY RESILIENT FLEXIBLE POLYURETHANE FOAMS HAVING IMPROVED TEAR STRENGTH

Collins W. Steward and Ronnie M. Pruitt, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 19, 1971, Ser. No. 200,573
Int. Cl. C08g 22/44
U.S. Cl. 260—2.5 A **8 Claims**

Flexible highly resilient polyurethane foams having improved tear strengths are prepared by employing a se-

lected modifier compound such as for example tris(2,3-dibromopropyl) phosphate, bis(1,3-dibromo-2-propyl) 2,3-dibromopropylphosphate, tris(1,3-dibromo-2-propyl) phosphite, bis(2-bromopropyl)2-bromopropyl phosphonate, dioctyl phthalate, diisodecyl phthalate, and trishalogenated propyl phosphate.

3,772,223

PROCESS FOR THE PREPARATION OF A POROUS PLASTICS MATERIAL AND THE PRODUCT RESULTING THEREFROM

Roger de Broutelles, Hem, and Louis Duchene, Tourcoing, France, assignors to Etablissements Pennel & Flipo, Roubaix, France

No Drawing. Continuation-in-part of abandoned application Ser. No. 839,091, July 3, 1969. This application Apr. 14, 1972, Ser. No. 244,285

Claims priority, application France, July 22, 1968, 162,052

Int. Cl. C08g *22/44, 53/08*

U.S. Cl. 260—2.5 AY **11 Claims**

A process for preparing a porous plastic material comprising mixing a polymer selected from the polyurethanes, the polyamides and the condensation products of polyamides with epoxy resins with from 50 to 100%, by weight of the polymer, of a gel resulting from the admixture of a petroleum oil with from 10 to 30%, by weight of the petroleum oil, of a metal salt of an acid having the general formula R(COOH) in which R is a hydrocarbon radical containing at least 4 carbon atoms, shaping the resulting heterogeneous mixture into the desired form and removing at least a portion of the gel, which portion comprises substantially the entire petroleum oil.

3,772,224

PROCESS FOR PRODUCTION OF A POLYURETHANE FOAM FROM A HEAT CURABLE FROTH

Lawrence Marlin, Yorktown Heights, and Eric George Schwarz, Somers, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 795,674, Jan. 31, 1969. This application Aug. 11, 1972, Ser. No. 279,882

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 BD **20 Claims**

Process for preparing cured polyurethane foam consisting essentially of (1) forming a heat curable polyurethane-forming froth which is substantially structurally and chemically stable, but workable at ambient conditions and (2) heating said froth at a temperature of at least 70° C. to form a cured polyurethane foam.

3,772,225

POLYUREIDE-FORMALDEHYDE RESINS AND PROCESSES FOR MAKING AND USING SAME

Robert Paul Avis, West Chester, Pa., assignor to Scott Paper Company, Delaware County, Pa.

No Drawing. Continuation of abandoned application Ser. No. 866,387, Oct. 14, 1969. This application Nov. 19, 1971, Ser. No. 200.588

Int. Cl. C08g *9/00, 9/08*

U.S. Cl. 260—17.3 **9 Claims**

A water-soluble, cationic, thermosetting, polyureide-formaldehyde resin condensate is formed by reacting a polyalkylene polyamine with a urea to form a polyureide intermediate, then quenching the polyureide-forming reaction with an organic hydroxyl-containing compound, and then finally reacting the quenched polyureide intermediate with formaldehyde to form the water soluble, cationic, thermosetting resin product. The product is useful as a wet-strength additive in paper and as the resin component in aqueous printing fluids which are, in turn, useful in the high speed printing or decorating of absorbent papers.

3,772,226

SUSPENSION POLYMERIZATION OF VINYL CHLORIDE

Eric Powell and Ross M. Kitchen, Shawinigan South, Quebec, Canada, assignors to Gulf Oil Canada Limited, Toronto, Ontario, Canada

No Drawing. Filed June 4, 1971, Ser. No. 150,167

Int. Cl. C08f *1/11, 1/13*

U.S. Cl. 260—17 A **11 Claims**

An improvement in aqueous suspension polymerization of vinyl chloride is disclosed wherein particular copolymers of maleic anhydride and alpha-olefins of 6–20 carbon atoms are used, in combination with known protective colloids, as suspending agents.

3,772,227

ELECTRODEPOSITABLE POLYESTER COMPOSITIONS CONTAINING A METHYLOL PHENOL ETHER

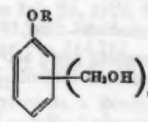
Erwin J. Kapalko and William H. English, Delaware, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Original application July 31, 1968, Ser. No. 748,953, now abandoned. Divided and this application May 13, 1971, Ser. No. 143,254

Int. Cl. C08g *45/08, 51/58*

U.S. Cl. 260—18 R **8 Claims**

Electrodepositable coating compositions having outstanding detergent resistance and other improved properties are provided by a combination of a vehicle resin which is a mixed partial ester of a resinous polyol containing free carboxyl groups, said polyol having a portion of its hydroxyl groups esterified with fatty acid and at least a portion of the remaining hydroxyl groups esterified with an unsaturated fatty acid alpha, beta-ethylenically unsaturated carboxylic acid anhydride adduct, said adduct forming the ester, then the anhydride ring of the adduct; and a methylolphenol ether composition of the formula:



where *n* is 1 to 3 and R is an unsaturated aliphatic group or a halogenated derivative of such a group. The amide interpolymer is modified by reaction of the amide groups with an aldehyde and preferably these groups are further reacted with an alcohol. The properties of these coating compositions make them highly useful on appliances such as laundry equipment, particularly as primers.

3,722,228

PROCESS FOR PREPARING POLYEPOXIDE DISPERSION COATING COMPOSITIONS

Roy A. Allen, Laurel Springs, N.J., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 732,860, May 29, 1968. This application Jan. 7, 1971, Ser. No. 104,780

Int. Cl. C09d *3/52, 3/58, 5/26*

U.S. Cl. 260—21 **20 Claims**

A one-package, thermoset coating composition that can be applied by conventional liquid application techniques is prepared by grinding and dispersing (1) a solid, friable polyepoxide, (2) a solid, friable epoxy curing agent, preferably polycarboxylic acid anhydrides such as benzophenone tetracarboxylic dianhydride and, optionally (3) an epoxy curing accelerator (stannous octoate), in a liquid which is a non-solvent for the components (aliphatic hydrocarbons).

3,772,229
PRODUCTION OF POLYESTERAMIDES FROM AZIRIDINE SALTS

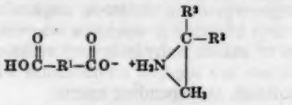
Ray C. Christena, Wichita, and Earnest L. Johnston, Clearwater, Kans., assignors to Vulcan Materials Company, Birmingham, Ala.

No Drawing. Continuation-in-part of applications Ser. No. 68,492, now Patent No. 3,676,291, and Ser. No. 68,493, now Patent No. 3,676,424, both Aug. 31, 1970. This application July 22, 1971, Ser. No. 165,323

Int. Cl. C08g *20/30*

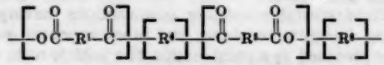
U.S. Cl. 260—22 R **26 Claims**

An aziridine salt represented by the structural formula:



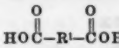
wherein R^1 represents a divalent radical such as alkylene, arylene, or aralkylene, wherein one or all of the hydrogen atoms thereof can be substituted with F, Cl, Br, lower alkyl and/or lower alkoxy; and where R^2 and R^3 represent monovalent radicals such as hydrogen, alkyl, or aryl;

is reacted with a polycarboxylic acid, such as maleic or dimer acid, and with a polyhydric alcohol, such as castor oil or 1,6-hexane diol, to form a polyesteramide represented by the structural formula:

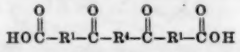


wherein R^1 has the meaning given above; R^4 represents a divalent radical such as aminoalkyleneoxy or oxyalkyleneamino; R^5 represents a divalent radical such as alpha-beta ethylenically unsaturated alkylidene; and R^6 represents a divalent radical such as alkylene or alkylidene.

The above aziridine salt may also be reacted with an acid represented by the structural formula

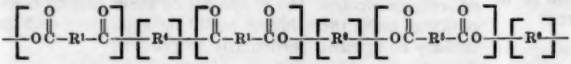


wherein R^1 has the meaning given above, to yield a diacid represented by the structural formula



where R^4 has the meaning given above.

The above diacid may then be reacted with the polycarboxylic acid and the polyhydric alcohol to form a polyesteramide represented by the structural formula



where R^1, R^4, R^5 and R^6 have the meanings given above.

3,772,230
POLYHYDRO-IMIDAZO[1,5-a]PYRIMIDINE - 3(2H)-THIONE AND PYRIDO[1,2-c]PYRIMIDINE - 1-THIONE

Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Original application May 28, 1969, Ser. No. 835,289, now Patent No. 3,631,046. Divided and this application July 9, 1971, Ser. No. 161,302

Int. Cl. C07d *51/46*

U.S. Cl. 260—251 A **3 Claims**

The compounds are tetracyclic quinazolin-ones of the class of polyhydro-pyrido[1',2':3,4]-imidazo[2,1-b] or polyhydropyrido[1',2':3,4] - pyrimido[2,1-b] quinazolin-11-ones which are pharmacologically active as central nervous system depressants and useful, for example, as sedatives. Preparation involves reaction of novel intermediates of the class polyhydro-3-organomercapto-imidazo[1,5-a]pyridine and polyhydro-1-organomercapto-pyrido[1,2-c]pyrimidine with N-carboxy anthranilic anhydride(isatoic anhydride), or its derivatives, or with anthranilic acid, or its derivatives. The novel intermediates are in turn produced from novel compounds of the class of polyhydro-imidazo-pyridine or polyhydro-pyrido-pyrimidine thiones, for example, by reaction with a haloalkyl.

3,772,231
THERMOSETTING RESIN COMPOSITION

Satoru Enomoto, Mikio Fujioka, and Masao Koguro, Tokyo, Hisayuki Wada, Urawa, and Tsuyoshi Saito, Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 16,615, Mar. 4, 1970. This application Oct. 12, 1971, Ser. No. 188,599

Int. Cl. C08g *51/52*

U.S. Cl. 260—28 **2 Claims**

A tar or pitch resin composition comprising an epoxide resin or a urethane resin and a tar or a pitch is disclosed.

3,772,232
FLAME-RETARDANT POLYMERS

Ernest Frank Hayes, Liverpool, England, assignor to Monsanto Chemicals Limited, London, England

No Drawing. Filed June 26, 1972, Ser. No. 266,107

Claims priority, application Great Britain, June 30, 1971, 30,606/71

Int. Cl. C08f *45/30*

U.S. Cl. 260—28.5 AV **3 Claims**

Flame-retardant olefin polymers are prepared which contain a halogenated hydrocarbon wax and a tris(dihaloalkyl) phosphate. The flame-retardant olefin polymers retain necessary optical and compatibility properties and are useful in the preparation of film for packaging purposes.

3,772,233
WAX COMPOSITIONS INCORPORATING ALPHA OLEFINS

Frederick Gaab, Bethpage, N.Y., and John W. Padgett and Sherman T. Van Esselstyn, New Canaan, Conn., assignors to Moore & Munger, Inc., Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 85,218, Oct. 29, 1970. This application July 24, 1972, Ser. No. 274,622

Int. Cl. C08f *45/52;* **C09d** *13/00*

U.S. Cl. 260—28.5 A **3 Claims**

Petroleum waxes mixed with alpha olefins to produce base wax compositions superior to conventional petroleum wax compositions, and possessing unique dispersing properties, such that stearic acid may be eliminated or used in substantially reduced quantities. Any desired additives may be utilized to produce a product having physical properties required for crayon wax compositions, candle wax compositions, color concentrates, carbon paper, shoe polish, and similar products.

3,772,234
WAX-HYDROGENATED BLOCK COPOLYMER COMPOSITIONS AND ARTICLES MADE THEREFROM

Lee M. Porter, Pleasant Hill, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 12,853, Feb. 19, 1970. This application June 21, 1971, Ser. No. 155,272

Int. Cl. C08d *13/16;* **C08f** *45/52*

U.S. Cl. 260—28.5 B **6 Claims**

The modification of petroleum waxes with certain hydrogenated block copolymers substantially improves their

flexibility and toughness as well as other properties particularly desirable in paper or film coating as well as for lamination purposes and carpet backing.

3,772,235
COPOLYMERS AND HYDROGELS OF UNSATURATED HETEROCYCLIC COMPOUNDS
Paul Stamberger, Baltimore, Md., assignor to Union Optics Corporation, Verona, Pa.
No Drawing. Filed Oct. 5, 1971, Ser. No. 186,822
Int. Cl. C08f *19/10, 41/06*
U.S. Cl. 260—29.6 HN 20 Claims

Water insoluble but water swellable polymer comprising certain N-vinyl or N-allyl heterocyclic compounds; and glycidyl methacrylate, and/or glycidyl acrylate and/or glycidyl crotonate. The polymer may be swelled in aqueous solution to provide a transparent hydrogel having excellent physical and optical properties, and suitable in an ophthalmic lens.

3,772,236
POLYFLUOROCARBON-MOISTURE CURING POLYURETHANE POLYVINYL BUTYRAL-DISPERSION COMPOSITION FOR LOW FRICTION COATINGS
Cornelius Soons, Scheemda, Netherlands, assignor to Acheson Industries, Inc., Port Huron, Mich.
No Drawing. Continuation-in-part of application Ser. No. 872,765, Oct. 30, 1969, which is a continuation-in-part of application Ser. No. 645,612, June 13, 1967, both now abandoned. This application Nov. 9, 1971, Ser. No. 197,101
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 F 11 Claims

Stabilized dispersions of polytetrafluoroethylene particles in a water-containing moisture curing polyurethane polymer solution suitable for use in preparing low-friction protective coatings, methods of preparing such dispersions and methods of applying these dispersions to substrates to form low-friction coatings.

3,772,237
VINYL PASTE SEALANT COMPOSITION
Allan R. Bullman, Bernardsville, N.J., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 127,820, Mar. 24, 1971. This application May 17, 1972, Ser. No. 254,111
Int. Cl. C08f *45/40*
U.S. Cl. 260—31.8 M 10 Claims

The invention encompasses a vinyl paste sealant which possesses excellent physical properties and adhesion to a variety of substrates. The critical ingredients of the sealant are a vinyl dispersion resin, a vinyl blending resin, a ketonealdehyde condensation resin; a filler, a plasticizer and a NH_2-organo-functional silane adhesion promoter.

3,772,238
GLAZING COMPOSITION
Laurence A. Malone, 2111 Jefferson Davis Highway, Arlington, Va. 22202
No Drawing. Continuation-in-part of application Ser. No. 292,448, Feb. 12, 1973. This application Mar. 20, 1973, Ser. No. 343,003
Int. Cl. C08f *41/02, 41/06, 45/34*
U.S. Cl. 260—33.4 R 7 Claims

A glazing composition comprises three resin ingredients and three solvent ingredients and possesses hardness, adhesion, resistance and clarity characteristics quite remarkable by comparison to ostensibly similar compositions. The resin ingredients are styrene-butadiene resin, styrene-butyl acrylate resin, and methoxy methyl melamine resin. The solvent ingredients are toluene, xylene and isopropanol. The ingredients are combined in such a manner to form a clear liquid mix capable of air drying or high temperature drying into a hard film having the characteristics of glass, being highly resistant to scratches, abrasion, and ultra violet light. The composition thus is eminently suitable as a room temperature glaze.

3,772,239
SILICONE RUBBER COMPOSITION YIELDING A STRUCTURAL ASH ON COMBUSTION
Carl Newton Bruns, Adrian, Mich., assignor to Stauffer Chemical Company
No Drawing. Continuation of abandoned application Ser. No. 749,578, Aug. 2, 1968. This application May 25, 1972, Ser. No. 257,056
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB 2 Claims

A silicone rubber formulation incorporating sodium metasilicate and an inorganic compound, preferably nickelous oxide, having a melting point exceeding that of sodium metasilicate. On catalytic vulcanization of the formulation, a rubber-like composition results which on combustion yields a cohesive, rigid ceramic material.

3,772,240
SILICONE ELASTOMERS CONTAINING BORIC ACID
Thomas W. Greenlee, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed June 18, 1971, Ser. No. 154,650
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB 14 Claims

Room temperature vulcanizable silicone elastomer compositions which vulcanize through the reaction of silicon-bonded hydroxyl radicals and silicon-bonded alkoxy radicals in the presence of a metal carboxylic acid salt having improved adhesion to metal when boric acid is present in the mixture.

3,772,241
UNSATURATED POLYESTER RESINOUS COMPOSITIONS
Charles Henry Kroekel, Churchville, Pa., assignor to Rohm & Haas Company, Philadelphia, Pa.
Original application July 20, 1966, Ser. No. 566,580, now Patent No. 3,701,748. Divided and this application Dec. 30, 1971, Ser. No. 214,202
Int. Cl. C08f *43/08, 45/10*
U.S. Cl. 260—40 R 19 Claims

This invention provides a liquid, polymerizable composition of matter, suitable for molding glass fibrous reinforced articlges with exceptionable smooth surfaces, said composition being curable under heat and pressure to form a rigid, cured product which is characterized by an optically heterogeneous appearance. The composition comprises an α,β-ethylenically unsaturated polymerizable polyester having a molecular weight per double bond factor of 150 to 186, a monomer containing a $CH_2=C<$ group copolymerizable with the unsaturated polyester, and a thermoplastic polymer which is soluble in the monomer but which, when present during the copolymerization of the unsaturated polyester and the monomer, yields an optically heterogeneous cured composition.

3,772,242
RUBBERS REINFORCED BY SCRAP RUBBER CHAR
John W. Liska, Cuyahoga Falls, and Joseph A. Beckman, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Original application June 9, 1971, Ser. No. 151,524. Divided and this application June 5, 1972, Ser. No. 259,435
Int. Cl. C08c *11/18;* C10b *51/00*
U.S. Cl. 260—41.5 R 2 Claims

Scrap synthetic rubber is destructively distilled to produce a char. This char, when ground, is used in the reinforcement of rubbers.

3,772,243

POLYPROPYLENE STABILIZED WITH SUBSTITUTED CHALCONES AND FLAVANONES

John Howard Adams, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation of application Ser. No. 779,626, Nov. 27, 1968. This application Oct. 26, 1970, Ser. No. 85,835

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.8 A 2 Claims

Substituted chalcones and flavanones, now abandoned, are provided which are useful as oxidation inhibitors for hydrocarbon compositions.

3,772,244

BIS(ORGANOTIN) STABILIZERS FOR VINYL CHLORIDE POLYMERS

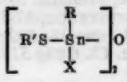
Anatole Wowk, Edison, N.J., assignor to M & T Chemicals Inc., Greenwich, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 43,231, June 3, 1970. This application Oct. 4, 1971, Ser. No. 186,430

Int. Cl. C08f *45/62*

U.S. Cl. 260—45.75 K 9 Claims

This invention comprises novel compounds of the formula:



wherein R is a hydrocarbon radical, R' is a hydrocarbon radical, the residue of a carboxylic acid ester or the residue of an alcohol, and X is halogen, methods of preparing these novel compounds, and polymers stabilized by these novel compounds against the deteriorative effects of heat and light.

3,772,245

POLYOLEFINS STABILIZED WITH ORGANIC HYDRAZINE COMPOUNDS AND PHENOLIC ANTIOXIDANTS

Martin Dexter, Briarcliff Manor, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 28,048, Apr. 13, 1970, which is a continuation-in-part of application Ser. No. 811,664, Mar. 28, 1969. This application Mar. 8, 1972, Ser. No. 232,959

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.85 N 15 Claims

Alkylhydroxyphenylalkanoylhydrazines or alkylhydroxybenzoylhydrazines and phenolic antioxidants stabilized olefin polymers in the presence of metals.

3,772,246

CYCLOALIPHATIC SULFIDES FOR STABILIZING POLYOLEFINS

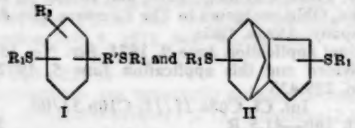
Bernard Buchholz, Blue Bell, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Original application Aug. 8, 1969, Ser. No. 848,737, now Patent No. 3,652,680. Divided and this application Jan. 3, 1972, Ser. No. 215,235

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.95 R 7 Claims

Cycloalkane bis(alkylsulfide) compounds of structure



where R_1 is higher alkyl, R_2 is H or lower alkyl and R' is lower alkylene and the use of these compounds in polyolefins as antioxidant-synergists.

3,772,247

SILOXANES

William Tait Flannigan, Kilwinning, Scotland, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Sept. 8, 1972, Ser. No. 287,486

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 H 7 Claims

Organopolysiloxane resins are provided which consist of the units $R_3SiO_{1/2}$ and SiO_2 with units of the type RHSiO and/or $HSiO_{3/2}$ where R is a monovalent hydrocarbon group, selected from the group consisting of alkyl, aryl, aralkyl, alkaryl, alkenyl, cycloalkyl or cycloalkenyl groups, the ratio of $R_3SiO_{1/2}$ units and RHSiO and/or $HSiO_{3/2}$ units to SiO_2 units being from 0.6:1 to 1.5:1 and the ratio of $R_3SiO_{1/2}$ units to RHSiO and/or $HSiO_{3/2}$ units being from 1:1 to 50:1. Additionally, if desirable, the silicon-bonded hydroxyl content is not greater than 1.0 percent weight.

3,772,248

POLYETHER/POLYARYLSULFONES

Harvey A. Brown, Lake Elmo, Herward A. Vogel, Oakdale, and Carl L. Sandberg, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Oct. 30, 1972, Ser. No. 301,837

Int. Cl. C08g *5/02*

U.S. Cl. 260—49 2 Claims

Fluoroaliphatic-linked polyether/polyarylsulfones.

3,772,249

FILLED POLYTETRAFLUOROETHYLENE COMPOSITIONS

David Evan Bryan Morgans, Hatfield, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,451

Claims priority, application Great Britain, Oct. 5, 1970, 47,150/70

Int. Cl. C08f *45/04*

U.S. Cl. 260—41 B 5 Claims

Filled PTFE compositions are made by mixing one or more fillers with a degraded PTFE and then adding this mixture to an aqueous dispersion of PTFE and effecting coagulation of the PTFE dispersion.

3,772,250

BRANCHED AROMATIC POLYESTERS CONTAINING CYANURYL NUCLEUS RADICALS

James Economy, Eggertsville, Steve G. Cottis, Amherst, and Bernard E. Nowak, Lancaster, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

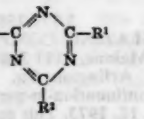
No Drawing. Filed Dec. 8, 1970, Ser. No. 96,234

Int. Cl. C08g *17/02, 17/08*

U.S. Cl. 260—47 CP 11 Claims

Branched, wholly aromatic polyesters of Formula I

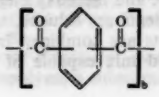
(I)



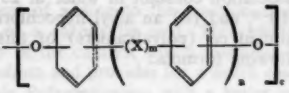
wherein R^1, R^2 and R^3 each consist essentially of a plurality of moieties selected from the group having the Formulas II, III, and IV

(II)

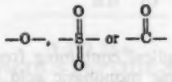
(III)



(IV)



and wherein X is



m is 0 or 1; *n* is 0 or 1; *a* is 0–40; *b* is 0–20; *c* is 0–20; and $a+b+c$ is 2–40.

3,772,251

AROMATIC FLUOROALIPHATIC-LINKED POLYSULFONATE ESTERS

Harvey A. Brown, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Oct. 30, 1972, Ser. No. 301,836
Int. Cl. C08g *5/02*
U.S. Cl. 260—49 2 Claims

Aromatic fluoroaliphatic-linked polysulfonate esters.

3,772,252

METHOD OF PREPARING SMALL PARTICLES OF A SOLID POLYMER

Harry W. Blunt, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed May 17, 1972, Ser. No. 254,294
Int. Cl. C08g *53/03*
U.S. Cl. 260—75 T 5 Claims

Small particles of a normally solid polymer are prepared by emulsifying in water a solution of the polymer and adding to this emulsion a water immisicible organic liquid which is miscible with the polymer solvent but which is itself a nonsolvent for the polymer. The polymer solvent is thus extracted out of the emulsified polymer solution droplet and the polymer is liberated as a particle having substantially the same spherical shape as the droplet. The method works most effectively with normally solid thermoplastic polyesters to form spherical particles suitable as powder coatings.

3,772,253

PROCESS FOR THE ANIONIC POLYMERIZATION OF LACTAMS

Bert Brassat, Krefeld-Bockum, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 18, 1972, Ser. No. 254,407
Claims priority, application Germany, May 18, 1971, P 21 24 497.3
Int. Cl. C08g *20/18*
U.S. Cl. 260—78 L 7 Claims

An improved process for the production of polyamides by activated anionic polymerization of a polymerizable mixture comprising a lactam, a catalyst and an activator, wherein an aluminum alcoholate is added to said mixture.

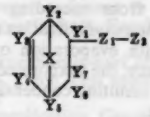
3,772,254

ENDO ALICYCLIC END CAPPED POLYIMIDE RESINS

Robert J. Jones, Hermosa Beach, and Eugene A. Burns, Palos Verdes Peninsula, Calif., assignors to TRW Inc., Redondo Beach, Calif.

No Drawing. Filed Apr. 3, 1972, Ser. No. 240,768
Int. Cl. C08g *20/32*
U.S. Cl. 260—78 TF 7 Claims

Polyimide resins having high temperature stability can be made by curing chemically stable alicyclic endo end capped aromatic prepolymers. The prepolymers can be made by reacting proper stoichiometric amounts of an aromatic tetracarboxylic acid or derivative with an aromatic diamine or diisocyanate, and an end capping compound having the formula:



wherein Y_1–Y_6, inclusive, can be hydrogen, halogen, nitro, aryl, alkyl, alkyl ether, or alkyaryl; X can be carbonyl, oxygen, sulfur, methylene, halogen substituted methylene, alkyl substituted methylene, or aryl substituted methylene; Z_1 can be an arylene or an alkylene group having 0 to 4 carbon atoms; Z_2 is an amine or an isocyanate, and Y_7 can be hydrogen, halogen, nitro, aryl, alkyl, alkyl ether, alkaryl, or amino in a stable combination with Y_6. The end capping compound can be synthesized by reacting a cyclo diolefin with an olefinic compound according to Diels-Alder reaction.

3,772,255

RING-OPENING POLYMERIZATION OF CYCLOOLEFINS

Anthony J. Bell, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 98,450, Dec. 15, 1970. This application June 7, 1972, Ser. No. 260,606
Int. Cl. C08f *1/34*
U.S. Cl. 260—88.2 D 4 Claims

There is disclosed a method for the ring-opening polymerization of cycloolefins which uses as a catalyst a mixture of tungsten oxide and either aluminum chloride or alkyl aluminum dichloride, wherein the alkyl radicals contain from 1 to 10 carbon atoms.

3,772,256

BUTADIENE-ISOPRENE COPOLYMER RUBBER OF HIGH CIS CONTENT

Walter Nudenberg, West Caldwell, and Edward A. Delaney, Dover, N.J., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed July 15, 1971, Ser. No. 163,062
Int. Cl. C08f *15/04*; C08d *1/14, 3/04*
U.S. Cl. 260—82.1 5 Claims

Butadiene-isoprene elastomeric copolymers in which 80–99 percent of the butadiene and 40–90 percent of the isoprene are in the cis configuration are made using ether-free "diphenyl magnesium"-titanium tetraiodide catalyst. The elastomers have good processing characteristics and yield vulcanizates having low hysteresis, and good cold properties and wear characteristics, making them useful for pneumatic tires.

3,772,257

PRODUCTION OF STYRENE/ACRYLONITRILE-COPOLYMERS

Gerhard Kohlpoth, Bochum, Peter Komischke, Hurth-Efferen, Johann Mixich, Liblar, and Hans-Joachim Kilger, Hurth, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Filed Nov. 22, 1971, Ser. No. 201,110
Claims priority, application Germany, Nov. 21, 1970, P 20 57 250.3
Int. Cl. C08f *15/22*
U.S. Cl. 260—85.5 R 3 Claims

Production of styrene/acrylonitrile copolymers by polymerization in emulsion in the presence of a suitable

catalyst and an emulsifier, wherein following the start-up of the polymerization, which gives rise to the evolution of considerable heat of reaction, a portion of the reaction heat is used for maintaining the necessary reaction temperature and for preheating feed material, and the balance of the reaction heat is dissipated so as to prevent the reaction temperature from exceeding a given maximum value. To this end the polymerization mixture is subjected to vapor cooling with evaporation of a fraction of the polymerization mixture, the evaporated fraction is liquefied in a condenser, and resulting condensate is refluxed to the polymerization zone.

3,772,258

PROCESS FOR THE POLYMERIZATION OF ACRYLIC ACID ESTERS

Donald R. Lachowicz, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Oct. 13, 1971, Ser. No. 188,438

Int. Cl. C08f *3/64, 3/66, 15/26*

U.S. Cl. 260—86.1 E **13 Claims**

Vinyl monomers of the type exemplified by the alkyl methacrylates are first contacted with dinitrogen tetroxide and the thus-treated alkyl methacrylate heated to a temperature of from about 50 to about 140° C. to effect polymerization of the methacrylate.

3,772,259

2-VINYL-1-CYCLOAMIDINEPROPIONAMIDE POLYMERS

Laurence Lyman Williams, Stamford, and Anthony Thomas Coscia, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 471,463, July 12, 1965, which is a continuation-in-part of application Ser. No. 745,485, July 17, 1968, now Patent No. 3,556,932. This application Jan. 18, 1971, Ser. No. 107,586

Int. Cl. C08f *3/76, 3/90;* **D21h** *3/38*

U.S. Cl. 260—88.7 R **4 Claims**

Water-soluble cationic substantially linear polymers which consist essentially of 2-vinyl-1-cycloamidine-propionamide linkages are effective flocculants for solids suspended in aqueous state. When carrying a sufficient number of glyoxal substituents to be thermosetting, the polymers are wet-strengthening agents for paper. Wet strength paper made by use of this polymer loses about half of its wet strength on normal wet weathering, thus alleviating the litter problem.

3,772,260

HIGH MOLECULAR WEIGHT SUBSTITUTED (CO) POLYALKAMERS AND PROCESS FOR PREPARING SAME

Gino Dall'Asta, San Giuliano Milanese, Pietro Meneghini, Pioltello, and Ugo Gennaro, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Oct. 14, 1971, Ser. No. 189,341

Claims priority, application Italy, Oct. 17, 1970, 31,097/70

Int. Cl. C08f *7/00*

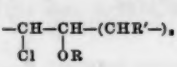
U.S. Cl. 260—88.2 F **7 Claims**

New products are disclosed which are substituted (co) polyalkamers of high molecular weight and the macromolecules of which consist essentially of the same or different repeating units and are characterized in exhibiting a main linear saturated hydrocarbon chain having two side substituents linked to adjacent carbon atoms. One of the substituents is a chlorine atom; the other is an ester group.

The new substituted (co) polyalkamers are prepared by reacting a polyalkenamer made up of the same or different units, dissolved in methylene chloride, alone or mixed with methanol or benzene, with (a) an organic monobasic acid containing from 1 to 18 carbon atoms and having a dissociation constant in water at 25° C. of at least 1.65×10^{-5}, and (b) an alkyl hypochlorite.

The substituted co (polyalkamers) of this invention have the following formula:

(I)



in which R is a radical containing from 1 to 18 carbon atoms of an organic monobasic acid having a dissociation constant in water at 25° C. of at least 1.65×10^{-5}; the R′ groups are hydrogen atoms or a part of them are methyl groups; z is a whole number from 3 to 10; and the ratio between the methylene groups and the sum of the CHCl and CHOR groups is comprised between 1.5:1 and 5:1.

3,772,261

DIRECT PREPARATION OF POLY-OLEFIN POWDERS

Volkert Faltings, Gelsenkirchen-Buer, Klaus Doerk, Dortsen, Klaus Koch, Gelsenkirchen-Buer-Reese, and Richard Schaaf, Altendorf-Ulfkotte, Germany, assignors to Scholven-Chemie Aktiengesellschaft

No Drawing. Filed June 30, 1969, Ser. No. 837,955

Claims priority, application Germany, July 2, 1968, P 17 70 765.2

Int. Cl. C08f *1/28, 3/06, 3/10*

U.S. Cl. 260—94.9 DA **5 Claims**

Ethylene and/or α-olefins are polymerized in a Ziegler-type polymerization with the catalyst being carried on a finely-divided particulate support which becomes incorporated in the polymerized product. The particles of the polymerized product are of the same uniform shape as the support but are larger in size. A free-flowing powdered product is obtained which can be directly converted to finished products without the need to remove the support material.

3,772,262

PROCESS FOR RECOVERING POLYMERS FROM ORGANIC SOLUTIONS

Anacleto Clementi, Saronno, Italy, assignor to Snam Progetti, S.p.A., San Donato, Milanese, Italy

Filed Feb. 18, 1971, Ser. No. 116,490

Claims priority, application Italy, Feb. 18, 1970 20,745/70

Int. Cl. C08d *3/04, 3/06, 5/00*

U.S. Cl. 260—94.7 **7 Claims**

The present invention provides a process for recovering polymers of conjugated diene monomers from organic solutions by means of two strippers using steam and water and effecting transfer from the first to the second stripper by a pressure differential.

3,772,263

MANUFACTURE OF AMORPHOUS POLYBUTADIENE WITH A HIGH CONTENT OF 1,2 UNITS

François Dawans, Bougival, and Pierre Amigues, La Muladiere, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France

No Drawing. Filed Nov. 8, 1971, Ser. No. 196,718

Claims priority, application France, Nov. 23, 1970, 7042059

Int. Cl. C08d *1/14, 3/06, 3/08*

U.S. Cl. 260—94.3 **10 Claims**

Process for the selective conversion of 1,3-butadiene to amorphous polybutadiene, having 70–98% of the vinyl structure, in the presence of a catalyst consisting of a mixture of a molybdenum halide or oxyhalide with a monoalkoxydialkylaluminum compound, comprising the

improvement of adding to the reaction medium at least one ester of a carboxylic acid. This addition enhances the activity of the catalyst which is soluble in the hydrocarbon medium and provides for a much easier and more reproducible Polymerization with a better control of the polymer molecular weight and an easier purification of the polymer.

3,772,264

HOMOGENEOUS PEPTIDE SYNTHESIS

Ernst Bayer and Manfred Mutter, Tubingen, Germany, and Dieter Gillessen, Birsfelden, Hans Künzi, Riehen, and Rolf Studer, Bottmingen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Sept. 17, 1971, Ser. No. 181,609
Claims priority, application Germany, Sept. 26, 1970, P 20 47 413.9
Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*
U.S. Cl. 260—112.5 **9 Claims**

Peptides are prepared in a homogeneous system by coupling a first amino acid to a soluble polymer support and thereafter coupling additional amino acids in desired sequence until the ultimate peptide is obtained. Reagents used in the intermediate steps are readily separated from the coupled polymer-amino acid chain by selective filtration techniques. In the final step the desired peptide is cleaved from the polymer support and separated from the soluble polymer by use of ultrafiltration.

3,772,265

PROCESS FOR PRODUCTION OF DIKETOPIPERAZINE DIHYDROXAMATES AND INTERMEDIATES THEREFOR

Yoshiazu Isowa, Funabashi, Toshiyuki Takashima, Ohya, Ebina, and Muneki Ohmori, Hideaki Kurita, Masanari Sato, and Kaoru Mori, Ohnuma, Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

No Drawing. Filed Mar. 29, 1972, Ser. No. 239,349
Claims priority, application Japan, Mar. 30, 1971, 46/18,373; Apr. 9, 1971, 46/21,781; May 20, 1971, 46/33,620
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 **1 Claim**

A process for the production of diketopiperazine dihydroxamates which are useful in the biological field and intermediates for the synthesis of said diketopiperazine dihydroxamates is disclosed.

3,772,266

PROCESS FOR THE PREPARATION OF PROPYLENE GLYCOL ALGINATE FROM PARTIALLY NEUTRALIZED ALGINIC ACID

David J. Pettitt and Vincent H. Noto, San Diego, Calif., assignors to Kelco Company, San Diego, Calif.

No Drawing. Continuation-in-part of application Ser. No. 261,125, June 8, 1972, which is a continuation of application Ser. No. 97,383, Dec. 11, 1970, both now abandoned. This application Oct. 19, 1972, Ser. No. 299,033
Int. Cl. C08b *19/10*
U.S. Cl. 260—209.6 **10 Claims**

Algenic acid which has been neutralized to the extent of about 6–50 mole percent, preferably about 8–22 mole percent, and has a solids content of from about 65 to about 78 weight percent, is reacted with gaseous propylene oxide at a pressure of at least about 0.8 atmosphere, preferably 0.8–1.5 atmospheres, and at a temperature of from about 60° C. to about 100° C. for a time such that the propylene glycol alginate has a significant solubility in distilled water, preferably has a pH, 2 weight percent solution in distilled water from about 3.4 to about 4.9. The propylene oxide affords essentially the gaseous atmosphere in the reaction vessel, that is, no significant amount of inert gas, such as air, is present therein.

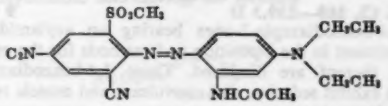
3,772,267

2-CYANO-4-NITRO - 6 - METHYLSULFONYL-1-[4'-DIETHYLAMINO - 2'-ACETYLAMINO-PHENYLAZO]-BENZENE

Dieter Cornelius, Darmstadt-Arheilgen, Hanswilli von Brachel, Leopoldshohe, and Heinz Bender, Bergen-Enkheim, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 791,775, Jan. 16, 1969. This application Nov. 8, 1971, Ser. No. 196,737
Claims priority, application Germany, Jan. 19, 1968, P 17 19 066.8
Int. Cl. C07c *107/06;* **C09b** *29/08*
U.S. Cl. 260—207.1 **1 Claim**

A water-insoluble monoazo dyestuff of the formula:



said dyestuffs being particularly suited for dyeing and printing synthetic fibers.

3,772,268

PURIFICATION OF COPPER CONTAMINATED DYE COMPOUNDS USING DI(HYDROXYALKYL) SULFIDES

Ralph R. Giles and James M. Straley, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 20, 1971, Ser. No. 210,172
Int. Cl. C07c *107/00;* **C09b** *43/00*
U.S. Cl. 260—208 **7 Claims**

Copper impurities in dye compounds are removed by contacting such a contaminated compound with a di(hydroxyalkyl)sulfide and recovering the dye substantially free of copper. The process can be employed in conjunction with the synthesis of cayno substituted dyes by cyanide displacement reactions which employ copper as a catalyst. The purification process results in certain addition compounds of a cuprous or cupric salt and the di(hydroxyalkyl)sulfide.

3,772,269

GLYCOSIDE COMPOSITIONS AND PROCESS FOR THE PREPARATION THEREOF

Baak W. Lew, Ardentown, Del., assignor to ICI America Inc., Wilmington, Del.

No Drawing. Filed July 24, 1969, Ser. No. 844,625
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R **12 Claims**

Glycoside compositions are prepared by reacting a monosaccharide, or a compound hydrolyzable to a monosaccharide, with a monohydric alcohol having from 8 to 25 carbon atoms, in the presence of an acid catalyst and in the presence of an alkylene glycol containing from three to five carbon atoms. The glycoside compositions of the present invention are useful as detergents, gelling agents, lubricants, wetting agents, dyeing assistants, textile softeners, and food emulsifiers.

3,772,270

ERYTHROMYCYLAMINE AND ERYTHROMYCYL B AMINE

Kocrt Gerzon and Hubert W. Murphy, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of abandoned application Ser. No. 756,292, Aug. 29, 1968. This application Nov. 21, 1969, Ser. No. 878,936
Int. Cl. C07c *129/18*
U.S. Cl. 260—210 E **6 Claims**

Erythromycylamine and erythromycyl B amine are prepared by the hydrogenation of the oxime, the hydrazine adduct or the N-isopropylidene derivative of the hydrazine adduct of erythromycin or of erythromycin B using a noble metal catalyst. Erythromycylamine and erythro-

mycyl B amine are antibiotically active both in vitro and in vivo and not only enjoy an increased stability towards acid, but also demonstrate a lower incidence of side effects when administered in vivo as compared with erythromycin itself.

3,772,271

1-ACYLAMIDOALKYL-BENZODIAZEPIN-2-ONES

Joseph Hellerbach, Basel, Switzerland, Armin Walser, West Caldwell, N.J., Hermann Bretschneider, Innsbruck, Austria, and Werner Rudolph, Nu- nberg, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,731
Claims priority, application Switzerland, Feb. 11, 1970, 1,956/70
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D **9 Claims**

1,4-benzodiazepin-2-ones bearing an acylamidoalkyl-substituent in the 1-position and methods for the preparation thereof are disclosed. These 1,4-benzodiazepin-2-ones exhibit sedative, anti-convulsant and muscle relaxant activity.

3,772,272

4,6-DIARYL-PYRIMIDIN-2(1H)-ONES

Goetz E. Hardtmann, Florham Park, and Faizulla G. Kathawala, West Orange, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 37,341, May 14, 1970, which is a continuation-in-part of application Ser. No. 878,572, Nov. 20, 1969, both now abandoned. This application Aug. 17, 1971, Ser. No. 172,583
Int. Cl. C07d *51/38*
U.S. Cl. 260—251 R **1 Claim**

The invention discloses compounds of the class of 1-substituted-4,6-diaryl-pyrimidin-2(1H)-ones, e.g. 1-alkyl-4,6-diphenyl-pyrimidin-2(1H)-ones. The disclosure also includes the preparation of the pyrimidin-2(1H)-ones by oxidation of the corresponding dihydro derivatives and by cyclization of a dibenzoylmethane with an N-alkyl-urea. Utility as pharmaceutical agents such as tranquilizers, sleep-inducers and anti-inflammatory agents is also disclosed.

3,772,273

DERIVATIVES OF QUINOXALINE

Everett E. Gilbert, Morristown, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Jan. 17, 1969, Ser. No. 792,130, now Patent No. 3,594,418. Divided and this application Mar. 17, 1971, Ser. No. 125,417
Int. Cl. C07d *51/78, 49/38*
U.S. Cl. 260—250 R **3 Claims**

New (2-hydroxyhexafluoro-2-propyl) benz-substituted benzoheterocyclic nitrogen compounds useful in the preparation of benzoheterocyclic nitrogen compound carboxylic acids and as hypotensive agents, and new (2-hydroxyhexafluoro-2-propyl)-3,4-diaminobenzene precursor for such compounds.

This application is a division of application Ser. No. 792,130, filed Jan. 17, 1969, now U.S. Pat. 3,594,418.

3,772,274

PROCESS FOR PREPARING 2-(o-HYDROXYPHENYL)QUINAZOLINES

Ralph Benjamin Kaplan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,173
Int. Cl. C07d *51/48*
U.S. Cl. 260—251 Q **13 Claims**

The process of preparing a 2-(o-hydroxyphenyl)quinazoline which comprises reacting an organic nitrile compound with an N-phenyl-o-oxybenzimidoyl chloride in the presence of a Friedel-Crafts catalyst at a temperature of from about 90° to about 160° C.

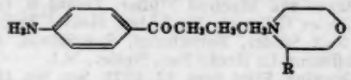
3,772,275

ANTIDEPRESSIVE MORPHOLINO COMPOUNDS AND METHODS OF PRODUCING THE SAME

Sven E. H. Hernestam, Malmo, Sweden, and Richard F. Squires, Olstykke, Denmark, assignors to A/S Ferrosan, Soborg, Denmark

No Drawing. Filed Mar. 23, 1970, Ser. No. 22,014
Claims priority, application Great Britain, Mar. 21, 1969, 15,052/69
Int. Cl. C07d *87/40*
U.S. Cl. 260—247.5 R **1 Claim**

Butyrophenone derivatives of the general formula



where R is an alkyl with 1–4 carbon atoms are new substances which can be used pharmaceutically. Their most characteristic effect is their ability to inhibit monoamine oxydase. They can be used as antidepressants. They may be produced from butyrophenone substituted in the γ-position and in the p-position of the benzene ring by substituents that can be readily replaced by the morpholino group and serve to establish the ring-bound amino group.

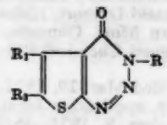
3,772,276

as-TRIAZINES

Fritz Sauter, Vienna, Austria, assignor to Centre d'Etudes pour l'Industrie Pharmaceutique, Toulouse, France

No Drawing. Filed Jan. 28, 1972, Ser. No. 221,805
Claims priority, application Austria, Feb. 3, 1971, A 902/71
Int. Cl. C07d *55/10*
U.S. Cl. 260—248 AS **2 Claims**

The invention relates to triazine derivatives having the formula:



(I)

in which R represents hydrogen, a lower alkyl, benzyl or phenacyl radical, R_1 represents hydrogen or a lower alkyl radical and R_2 represents a lower alkyl radical or, only in the case where R_1 is a hydrogen atom, also a hydrogen atom, or R_1 and R_2 represent together an alkylene bridge $—(CH_2)_n—$ in which n is an integer.

Said derivatives are therapeutically useful in view of their sedative, antalgic, anti-inflammatory, anti-tussive and diuretic properties.

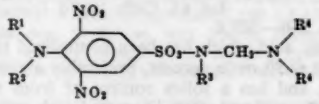
3,772,277

SULFONAMIDE COMPOUNDS

James R. Beck, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed June 28, 1971, Ser. No. 157,679
Int. Cl. C07c *143/00*
U.S. Cl. 260—239.6 **6 Claims**

The present invention is directed to novel compounds of the formula



which compounds are useful as herbicides. In the above and succeeding formulae herein, R^1 represents hydrogen or R^2, and each R^2 independently represents loweralkyl of C_1–C_4, loweralkenyl of C_3–C_4, loweralkynyl of C_3–C_4, or radical of the formula $—CH_2—CH_2(CH_2)_nY$ wherein n represents 0 or 1, and Y represents methoxy, cyano, bromo, or chloro, subject to the limitation that the groups represented by R^1 and R^2 together contain from 2 to 8, both inclusive, carbon atoms; R^3 represents hydrogen

or methyl; and each R^4, if taken separately, represents propyl, or both R^4, if taken together, jointly constitute with the nitrogen atom an aziridine, pyrrolidine, piperidine, hexahydroazepine, morpholine, or piperazine ring, or such ring bearing mono- or diloweralkyl substitution of a total of not more than 3 carbon atoms.

3,772,278

NOVEL HEXAHYDROINDOLIZINE AND HEXAHYDROQUINOLIZINE CYANINE DYES

Roy A. Jeffreys and Elizabeth A. Gloag, Harrow, England, assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Apr. 9, 1970, Ser. No. 27,179, now Patent No. 3,637,395, dated Jan. 25, 1972. Divided and this application May 28, 1971, Ser. No. 148,209

Int. Cl. C09b *23/10*

U.S. Cl. 260—240.4 5 Claims

Cyanine and monocyanine dyes are provided which feature an enamine group selected from a 1,2,3,5,6,7-hexahydroindolizine nucleus or a 1H-2,3,4,6,7,8-hexahydroquinolizine nucleus.

3,772,279

4-OXO-1,2,3-BENZOTRIAZINE-3-PROPIONIC ACIDS AND ESTERS

Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation of abandoned application Ser. No. 124,487, Mar. 15, 1971. This application July 24, 1972, Ser. No. 274,313

Int. Cl. C07d *55/08*

U.S. Cl. 260—248 AS 35 Claims

Disclosed are compounds of the class of 4-oxo-1,2,3-benzotriazine-3-propionic acids and esters thereof, e.g. 6-chloro-4-oxo-1,2,3-benzotriazine-3-β-propionic acid ethyl ester. The compounds have pharmacological activity in animals, e.g. anti-inflammatory activity. The compounds may be prepared, for example, by addition to the corresponding 3-unsubstituted compounds and by reaction of an anthranil amide with sodium nitrite and a strong inorganic acid, e.g. sulfuric acid. The acid forms are preferably prepared from the esters in a known manner.

3,772,280

THIOMORPHOLINE-COUMARIN DERIVATIVES

Rudi Beyerle, Bruchkobel, Ingerburg Lydia Katharina Stachel, Frankfurt am Main-Fechenheim, Rolf-Eberhard Nitz, Bergen-Enkheim, and Klaus Resag and Eckhard Schraven, Frankfurt am Main-Fechenheim, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

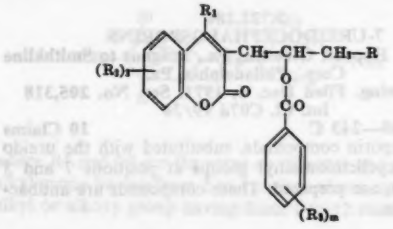
No Drawing. Original application Jan. 8, 1969, Ser. No. 789,919, now Patent No. 3,652,557, dated Mar. 28, 1972. Divided and this application July 27, 1971, Ser. No. 166,599

Claims priority, application Germany, Jan. 19, 1968, P 16 68 877.0

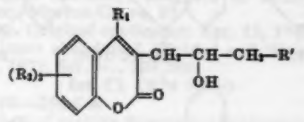
Int. Cl. C07d *99/10*

U.S. Cl. 260—243 B 3 Claims

The present invention relates to new coumarin compounds useful as coronary dilators and having the formula

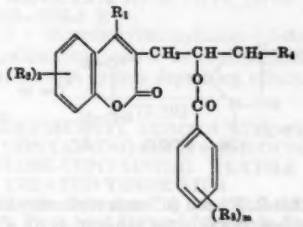


or the hydrochloric acid addition salts thereof, and to methods of preparing the same either by acylating, in the presence of acid-binding agents, if desired, coumarin derivatives having the formula



with acylating agents selected from the group consisting of alkoxybenzoic acid having the formula

and functional derivatives thereof, or by condensing, in the presence of acid-binding agents, if desired, coumarin derivatives having the formula



with an amine having the formula RH, wherein R is thiomorpholino, which is bound via its nitrogen atom; R_1 is selected from the group consisting of alkyl radicals having 1–4 carbon atoms and phenyl; R_2 is selected from the group consisting of 5,7-, 6,7- and 7,8-positioned alkoxy groups having 1–4 carbon atoms; R_3 is selected from alkoxy groups having 1–4 carbon atoms; R_4 is selected from the group consisting of chlorine and bromine; R' is thiomorpholino, which is bound via its nitrogen atom; and *m* is selected from the group consisting of 1, 2, and 3.

3,772,281

MEROCYANINE DYES FOR SENSITIZING ZINC OXIDE PHOTOCONDUCTORS

Kazuo Tubuko, Tuneo Kurotori, and Isao Tashiro, Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

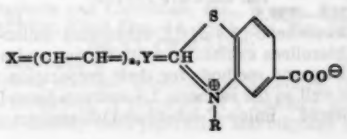
No Drawing. Filed July 9, 1971, Ser. No. 161,295

Claims priority, application Japan, July 14, 1970, 45/61,635

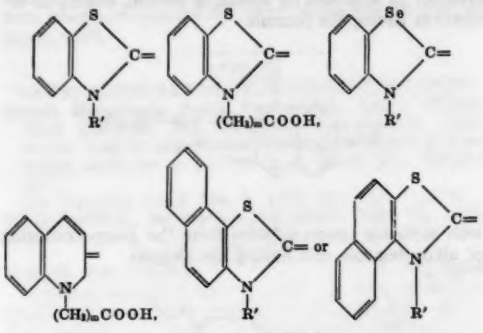
Int. Cl. G03g *5/08*

U.S. Cl. 260—240.1 7 Claims

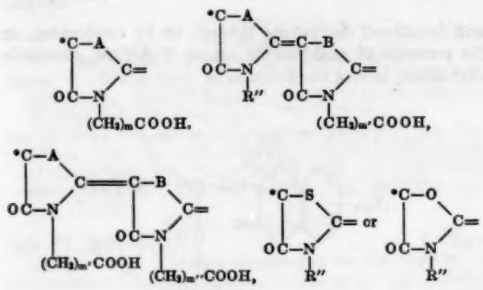
A sensitizer for use in copying materials, which is prepared by the use of water as a medium, for electrophotography, expressed by the following general formula:



wherein X= represents



Y=represents



[provided that R, R′ and R″ each represents alkyl radical having carbon atoms in the range of 1–10; *n*, *m*, *m′* and *m″* each represents 0 or a natural number in the range of 1–10; A and B each represents oxygen atom or sulfur atom and A may be the same as B; and * indicates the position bonding to $(CH{=}CH{=})_n$].

3,772,282

NOVEL 3-INDENECARBOXYLIC ACID-1-METHINE DERIVATIVES

John A. Ford, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 846,952 and Ser. No. 846,958, both Aug. 1, 1969. This application Sept. 14, 1970, Ser. No. 72,164

Int. Cl. C07c *69/74;* **C09b** *23/00, 23/14*

U.S. Cl. 260—240 R **14 Claims**

A novel class of 3-indenecarboxylic acid-1-methine compounds are described which can be used to dye textile fibers or to prepare light sensitive polymers.

3,772,283

3,5 - ANDROSTADIENO-[3,4-d]-(2′-IMINO-3′-SUBSTITUTED)-THIAZOLINES, ISOMERS THEREOF, METHODS FOR THEIR MANUFACTURE AND INTERMEDIATES USEFUL THEREIN

Thomas L. Popper, Verone, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Filed Feb. 1, 1973, Ser. No. 328,582

Int. Cl. C07c *173/10*

U.S. Cl. 260—239.5 **15 Claims**

3,5-androstadieno-[3,4-d]-(2′-substituted imino-3′-substituted)thiazolines exhibiting contraceptive and antilipogenic activity and methods for their preparation are described as well as the isomeric 2,4-androstadieno-[3,4-d]-(2′-substituted imino-4′-substituted)thiazolines useful mainly as intermediates. Also described are the acid addition and quaternary alkyl halide ammonium salts of the androstadieno-[3,4 - d]-(2′-substituted imino-3′-substituted)thiazolines.

3,772,284

AZIRINE COMPOUNDS

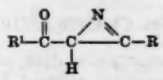
Balwant Singh, Stamford, Conn., and Edwin Fisher Ullman, Atherton, Calif., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 603,172, Dec. 20, 1966. This application Apr. 15, 1970, Ser. No. 28,955

Int. Cl. C07d *23/00*

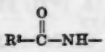
U.S. Cl. 260—239 A **7 Claims**

Azirine compounds of the formula:



wherein R is alkyl of C_1–C_8, phenyl or substituted phenyl and R^1 is alkyl of C_1–C_{18}, phenyl or substituted phenyl, where said substituents are members selected from the group consisting of cyano; halogen; trifluoromethyl; acyloxy of the formula:

amido of the formula:



amino of the formula: R^4R^5N—; alkoxy of the formula: R^6O—; alkylthio of the formula: R^6S—; and alkyl of C_1–C_{18}; where R^2 is alkyl of C_1–C_8, phenyl, naphthyl or hydrogen; R^3 is alkyl of C_1–C_8, phenyl or naphthyl; R^4 and R^5 are hydrogen or alkyl of C_1–C_8 and R^6 is alkyl of C_1–C_{18}, are prepared by the phototransposition of isoxazoles. They are useful in imaging. They are also useful in information storage and retrieval.

3,772,285

PROCESS OF PREPARING AROMATIC SULFONIC ACID SALTS OF HEXAMETHYLENETETRAMINE

Charles F. Winans and James A. Cardina, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,054

Int. Cl. C07d *55/52*

U.S. Cl. 260—248.5 **12 Claims**

Process of preparing certain aromatic monosulfonic acid salts of hexamethylenetetramine by sulfonating a monocyclic aromatic hydrocarbon to form a solution of the aromatic monosulfonic acid in the aromatic hydrocarbon, combining this solution with a suspension of hexamethylenetetramine in the aromatic hydrocarbon to form the aromatic monosulfonic acid salt of hexamethylenetetramine as a suspended solid product, removing the solid product, and returning the recovered aromatic hydrocarbon for a subsequent preparation.

3,772,286

7-UREIDOCEPHALOSPORINS

John R. E. Hoover, Glenside, Pa., assignor to Smithkline Corp., Philadelphia, Pa.

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,318

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **10 Claims**

Cephalosporin compounds, substituted with the ureido and heterocyclicthiomethyl groups at positions 7 and 3 respectively, are prepared. These compounds are antibacterial agents.

3,772,287

PYRRYLVINYLTHIAZOLIUM DERIVATIVES

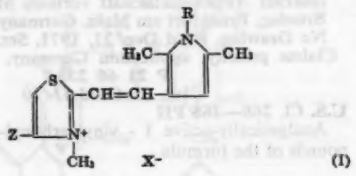
Robert Beck Burrows, Ardsley, and Arthur Page Phillips, Tuckahoe, N.Y., assignors to Burroughs Wellcome Co., Research Triange Park, N.C.

No Drawing. Continuation of abandoned application Ser. No. 15,944, Mar. 2, 1970. This application Jan. 5, 1972, Ser. No. 215,691

Int. Cl. C09b *23/10*

U.S. Cl. 260—240 E 14 Claims

Pyrrylvinylthiazolium salts of the following Formula (I)



(I)

wherein R is an alkyl or an optionally substituted phenyl group; Z is phenyl, p-halophenyl, p-alkoxyphenyl, biphenylyl, p-alkoxybiphenylyl or naphthyl; and x^- is the anion of a pharmaceutically acceptable acid.

The compounds are useful in having activity against parasitic nematodes infecting warm-blooded animals.

3,772,288

4,5-DIARYL-PYRIMIDIN-2(1H)-ONES

Goetz E. Hardtmann, Florham Park, and Faizulla G. Kathawala, West Orange, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 878,572, Nov. 20, 1969. This application Nov. 9, 1970, Ser. No. 88,222

Int. Cl. C07d *51/38*

U.S. Cl. 260—251 R 19 Claims

The invention discloses compounds of the general class of 1-substituted-diaryl-pyrimidin-2(1H)-ones in which one of the aryl substituents is at the 4-position and the other aryl substituent is at the 5-position, e.g., 1-alkyl-4,5-diphenyl-pyrimidin-2(1H)-ones. Also disclosed are other 4,5-aryl and 5-aryl-pyrimidin-2(1H)-ones useful as intermediates and as pharmaceutical agents. The compounds exhibit a variety of biological effects and utility as pharmaceutical agents such as tranquilizers, anti-inflammatory and analgesic agents is also disclosed.

3,772,289

ALKYL SUBSTITUTED BENZYL PYRIMIDINES

Barbara Roth, Research Triangle Park, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

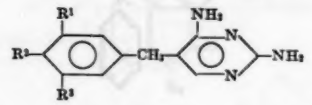
No Drawing. Filed Apr. 16, 1971, Ser. No. 134,876

Claims priority, application Great Britain, Oct. 22, 1970, 50,350/70

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 N 11 Claims

Antimalarial and antibacterial compounds of the formula



(I)

where R^1 and R^3 are the same or different and each is an alkyl group having from 2 to 4 carbon atoms, and R^2 is an alkyl or alkoxy group having from 1 to 12 carbon atoms.

3,772,290

METHOD OF PRODUCING THIAZOLOPYRIMIDINES BY REACTION OF 6-AMINO-1,3-DIMETHYLURACIL WITH ALKYL ISOTHIOCYANATE

Arthur Berger, Skokie, Ill., and Edeltraut E. Borgaes, Sindelfingen, Germany, assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Original application Apr. 13, 1969, Ser. No. 849,899, now abandoned. Divided and this application Nov. 18, 1971, Ser. No. 200,208

Int. Cl. C07d *99/10*

U.S. Cl. 260—256.5 R 1 Claim

The method of making thiazolopyrimidines by reaction of 6-amino-1,3-dimethyluracil with alkyl isothiocyanate and dimethylsulfoxide at reflux temperature.

3,772,291

2-ACYLIMINO-1,3-DIAZACYCLOALKENES AND -ALKADIENES

Robert Armistead Lucas, Mendham, and Herbert Morton Blatter, Summit, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 26,433, Apr. 7, 1970, now Patent No. 3,719,679, which is a continuation-in-part of application Ser. No. 884,322, Dec. 11, 1969, now Patent No. 3,627,889, which in turn is a continuation-in-part of application Ser. No. 839,704, July 7, 1969, now Patent No. 3,655,895. This application Mar. 29, 1971, Ser. No. 129,185

Int. Cl. C07d *49/34, 51/28, 53/02*

U.S. Cl. 260—256.5 R 3 Claims

Certain 2 - trimethoxybenzoylimino-1,3-diazacycloalkenes and -alkadienes, useful as intermediates, also exhibit central nervous system depressing effects.

3,772,292

N-HYDROXYMETHYL COMPOUNDS, COMPOSITIONS CONTAINING SUCH COMPOUNDS AND CELLULOSE-CONTAINING TEXTILE MATERIALS TREATED THEREWITH

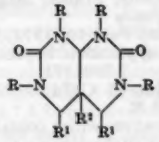
James C. Martin, Johnson City, and Ronald H. Meen, Kingsport, Tenn., and Howard M. Lewis, Dallas, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 30, 1970, Ser. No. 102,982

Int. Cl. C07d *51/46*

U.S. Cl. 260—256.4 F 1 Claim

Compounds having the formula



wherein each R is hydrogen, alkyl or hydroxymethyl, at least two R groups being hydroxymethyl, R^1 is alkyl, and R^2 is hydrogen or alkyl; compositions containing the described compounds and/or N-hydroxymethyl derivatives of other compounds obtained, in addition to the described compounds, by condensing an aliphatic aldehyde with a urea compound; and cellulose-containing textile materials treated with the compounds or compositions. The compounds and compositions impart wrinkle-resistant properties to cellulose-containing cellulose textile materials, such treated materials exhibiting excellent tensile strength and resistance to abrasion.

3,772,293

SINGLE STEP SYNTHESIS OF TRIETHYLENE DIAMINE

Merwin D. Oakes, Chester, Lawrence L. Upson, Wallingford, and Martin H. Ziv, Springfield, Pa., assignors to Air Products and Chemicals, Inc., Wayne, Pa.

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,557

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 T 9 Claims

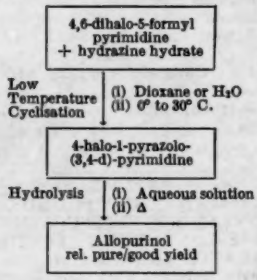
Triethylene diamine, important as a catalyst for polyurethane formation, is prepared in a one-step process in high yields directly from piperazine and ethylene oxide.

3,772,294
PROCESS FOR MAKING PYRAZOLO-(3,4-d)-PYRIMIDINES

Ctirad Podesva, Montreal, Quebec, Vaclav Musil, Ville la Salle, Quebec, and William T. Scott, Ville de Lery, Quebec, Canada, assignors to Delmar Chemicals Limited, Ville la Salle, Quebec, Canada

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,117
Claims priority, application Great Britain, Apr. 17, 1969, 19,684/69
Int. Cl. C07d *57/16*
U.S. Cl. 260—256.4 F 10 Claims

This invention relates to a novel and improved process for the preparation of defined 4-X-6-R-1-pyrazolo-(3,4-d) pyrimidine compounds. Included among these compounds is 4-hydroxy - 1 - pyrazolo-(3,4-d)-pyrimidine, commonly referred to as allopurinol, a drug useful in the treatment of hyperuricemia associated with gout and other conditions. This particular compound is prepared according to this invention in a two-stage reaction sequence, outlined in the flow sheet, involving the initial formation, through a novel and advantageous cyclisation reaction, of a 4-halo-1-pyrazolo-(3,4-d)-pyrimidine compound which is then converted (by hydrolysis of the 4-halo group) into the desired 4-hydroxy-1-pyrazolo-(3,4-d)-pyrimidine.



3,772,295
QUINAZOLINE DERIVATIVES

Max Fernand Robba, Paris, René Henri Pierre Marcy, Espins, Calvados, and Denise Jeanne Claude Duval, Sartrouville, Yvelines, France, assignors to Innothera, Val de Marne, France

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,797
Claims priority, application France, Feb. 16, 1970, 7005371
Int. Cl. C07d *99/02*
U.S. Cl. 260—256.5 R 2 Claims

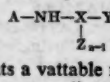
Quinazoline derivatives which contain an amino residue in 4-position and optionally other substituents are of value as diuretics. Their production and use is described.

3,772,296
VAT DYESTUFFS: ARYLOXYPYRIMIDINYL-ANTHRAQUINONE DERIVATIVES

Paul Ulrich and Max Staeuble, Basel, Fritz Kugler, Muttenz, and Max Jost, Oberwil, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Apr. 16, 1970, Ser. No. 29,245
Claims priority, application Switzerland, Apr. 23, 1969, 6,152/69; Mar. 3, 1970, 3,271/70
Int. Cl. C07d *51/36*
U.S. Cl. 260—256.4 C 8 Claims

The invention relates to dyestuffs of the general formula



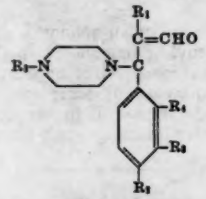
in which A represents a vattable residue, X a heterocyclic residue containing two cyclic nitrogen atoms which is bound with the —NH— group to a cyclic carbon atom directly or via a —CO— group, Y represents an oxygen or a sulphur atom, R represents an aromatic residue which is free from azo groups and is bound to the oxygen or sulphur atom Y through a carbon atom of the aromatic nucleus, which are suitable for vat and pigment dyeing. The dyeings obtained are distinguished by their good wet fastness and light fastness properties.

3,772,297
ANALGESIC 1-VINYLCARBONYLPIPERAZINE COMPOUNDS

Wilhelm Bartmann, Neuenhain, Taunus, Hans-Georg Alpermann, Kelkheim, Taunus, and Christian Jochum, Offenbach am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,621
Claims priority, application Germany, Dec. 4, 1971, P 21 60 235.7
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 PH 8 Claims

Analgesically-active 1 - vinylcarbonyl-piperazine compounds of the formula



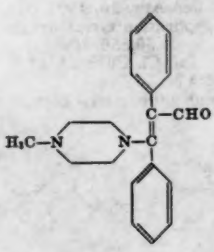
and salts thereof with physiologically tolerable acids, wherein R_1 is hydrogen, alkyl, phenyl, or halo-, alkyl-, or alkoxy-substituted phenyl; R_2, R_3, and R_4 may be the same or different and are hydrogen, alkyl, alkoxy, or halogen; and R_5 is alkyl or phenyl.

3,772,298
1-(1,2-DIPHENYL - 2 - FORMYLVINYL)-4-METHYL-PIPERAZINE AND SALTS THEREOF WITH PHYSIOLOGICALLY TOLERATED ACIDS

Wilhelm Bartmann, Neuenhain, Taunus, and Hans-Georg Alpermann, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,614
Claims priority, application Germany, Dec. 23, 1970, P 20 63 384.5
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 R 3 Claims

Analgesically active 1-(1,2-diphenyl-2-formylvinyl)-4-methylpiperazine,



and acid addition salts thereof with physiologically tolerated acids.

Method for preparing these compounds.

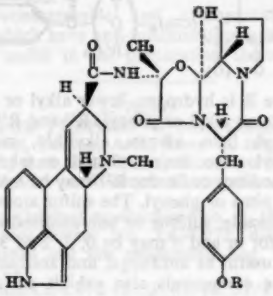
3,772,299

p'-ALKOXY-ERGOTAMINES

Paul Stadler, Biel-Benken, and Peter Stütz, Basel, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Filed May 25, 1971, Ser. No. 146,829
Claims priority, application Switzerland, May 26, 1970, 7,793/70
Int. Cl. C07d *51/64*
U.S. Cl. 260—268 PE 2 Claims

The present invention concerns new compounds of the formula:



wherein R is lower alkyl of 1 to 4 carbon atoms,

and their pharmaceutically acceptable acid addition salts.

The compounds and their pharmaceutically acceptable acid addition salts are useful in promoting uterus contractions. Furthermore, they are useful in the treatment of migraine type headaches and circulatory disorders.

3,772,300

2,2 - DISUBSTITUTED OMEGA-(1,4-DIAZABICYCLO [4.4.0]-DECANE)ALKANAMIDES AND RELATED COMPOUNDS

Calvin H. Lovell, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed May 28, 1971, Ser. No. 148,211
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 BC 4 Claims

2,2-disubstituted alkanamides having a diazabicyclodecane or diazabicyclononane substituent at the ω-position are described herein. The compounds are useful as anti-arrhythmic agents. The compounds are prepared by starting with the appropriate disubstituted acetonitrile or acetamide or from the appropriate diazabicycloalkane.

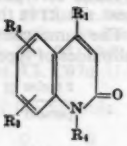
3,772,301

[4-SUBSTITUTED]4-(METHYLSULFINYL) METHYLCARBOSTYRILS

Maximillian von Strandtmann, Rockaway, and David T. Connor, Parsippany, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

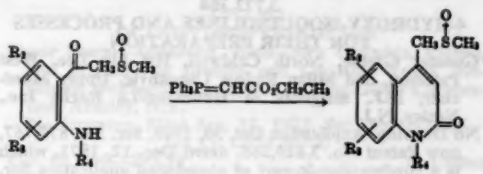
No Drawing. Filed Nov. 22, 1971, Ser. No. 201,208
Int. Cl. C07d *33/60*
U.S. Cl. 260—283 S 4 Claims

Compounds of the following formula:



wherein R_1 is (methylsulfinyl)methyl, dimethoxymethyl, acetyl(methylthio)methyl, formyl or hydroxymethyl; R_2 and R_3 are hydrogen, halogen, lower alkyl, aralkyl, aryl, lower alkoxy, acylamino, hydroxy or taken together R_2 and R_3 form another aromatic ring, and R_4 is hydrogen or methyl, are described. The compounds of this invention are useful for the treatment of allergic conditions.

The above compounds, when R_1 is (methylsulfinyl) methyl, are prepared as follows:



When R_1 is other than (methylsulfinyl)methyl, they are prepared by treating the (methylsulfinyl)methyl substituted carbostyrils with acetic anhydride as set forth in the body of the specification.

These compounds are useful in providing symptomatic relief of allergic conditions such as bronchial asthma.

3,772,302

PROCESSES AND INTERMEDIATES FOR QUININE, QUINIDINE, ISOMERS AND DERIVATIVES THEREOF

Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 104,784, Jan. 7, 1971, which is a continuation-in-part of application Ser. No. 837,354, June 27, 1969, which in turn is a continuation-in-part of application Ser. No. 741,914, July 2, 1968, all now abandoned. This application Dec. 27, 1971, Ser. No. 212,774
Int. Cl. C07d *43/24*
U.S. Cl. 260—284 10 Claims

The preparation of quinine, quinidine, isomers and derivatives thereof from the correspondingly substituted 4-methylquinoline and 1-acyl(or 1-H)-3-vinyl(or lower alkyl)-4-piperidine acetic acid esters (or acetaldehyde) through alternative series of reaction steps which comprise condensation, halogenation, deacylation, reduction, cyclization and hydroxylation, is described. Also described is the preparation of 1-acyl(or 1-H)-3-vinyl-4-piperidineacetic acids and esters thereof and 1-acyl-3-vinyl-4-piperidineacetaldehyde utilizing the corresponding 7-acyldecahydro-2H-pyrido[3,4-d]azepin-2-one, prepared from 2 - acyl - 1,3,4,7,8,8a-hexahydro-6(2H)-isoquinolone. The end products are useful as antimalarial and antiarrhythmic agents.

3,772,303

CIS-NAPHTHOYLENE-BIS-BENZIMIDAZOLE PIGMENT AND PROCESS FOR ITS MANUFACTURE

Ernst Spietschka, Oberauroff, and Josef Landler, Hofheim, Taunus, Germany, and Dieter Wager, East Greenwich, R.I., assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 5, 1971, Ser. No. 169,516
Claims priority, application Germany, Aug. 8, 1970, P 20 39 465.4
Int. Cl. C07d *49/40*
U.S. Cl. 260—282 5 Claims

The present invention provides a naphthoylene-bis-benzimidazole pigment in a new and valuable β-modification, which is characterized by an X-ray diffraction pattern with maximums of high intensity at the diffraction angles of 4.3°, 6.65° and 13.45° and maximums of medium intensity at the diffraction angles of 4.8°, 12.1° and 14.45°, measured with Cu-K α-irradiation.

The invention furthermore provides a process for the manufacture of the above specified pigment, wherein

crude cis-naphthoylene-bis-benzimidazole is heated in water and/or a solvent to temperatures in the range of about 100° to 250° and the pigment thus obtained is isolated in the usual manner.

3,772,304
4-HYDROXY-ISOQUINOLINES AND PROCESSES FOR THEIR PREPARATION

Guenter Grethe, North Caldwell, Hsi Lin Lee, West Paterson, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Oct. 30, 1969, Ser. No. 872,767, now Patent No. 3,629,265, dated Dec. 12, 1971, which is a continuation-in-part of abandoned application Ser. No. 571,406, Aug. 10, 1966. Divided and this application Mar. 19, 1971, Ser. No. 126,321
Int. Cl. C07d *35/10*
U.S. Cl. 260—287 R **6 Claims**

4-hydroxy-isoquinolines are disclosed. The compounds are useful as blood pressure lowering agents.

3,772,305
3-AMINO-3-CARBALKOXY-4-HYDROXY-2-OXO-4-PHENYL-1,2,3,4-TETRAHYDROQUINOLINES

Joseph Hellerbach and Andre Szente, Basel, Switzerland, and Armin Walser, West Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Jan. 9, 1970, Ser. No. 1,843, now Patent No. 3,657,223, dated Apr. 18, 1972. Divided and this application Dec. 10, 1971, Ser. No. 206,935
Claims priority, application Switzerland, Jan. 17, 1969, 638/69; Apr. 22, 1969, 6,056/69
Int. Cl. C07d *33/10*
U.S. Cl. 260—287 R **7 Claims**

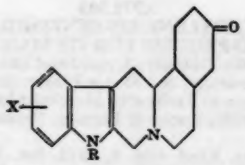
Process for the preparation of benzodiazepin - 2-ones comprising effecting ring expansion of the novel 2-oxo-3-aminoquinoline intermediates via acid or heat treatment. The end products are useful as sedatives, tranquilizers, anti-convulsants and muscle relaxants.

3,772,306
1,2,4a,5,6,8,9,14,14a,14b-DECAHYDROBENZ[a] INDOLO[2,3-g]QUINOLIZIN-3(4H)-ONES

Glenn C. Morrison, Dover, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Nov. 26, 1971, Ser. No. 202,570
Int. Cl. C07d *39/00*
U.S. Cl. 260—288 R **4 Claims**

Compounds of the formula are disclosed:



wherein X is hydrogen, lower alkyl, lower alkoxy, halogen, amino, N,N-disubstituted amino, etherified mercapto, nitro and hydroxyl; and R is hydrogen, lower alkyl, aralkyl, substituted aralkyl and acyl.

These compounds are prepared by the cyclization of a 1,2,3,4-tetrahydro-1(indol - 3 - ylmethyl)-6-methoxyisoquinoline with formaldehyde to give a hexahydro-3-methoxybenz[a]indolo[2,3-g]quinolizine, followed by reduction and hydrolysis respectively.

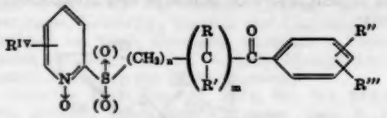
These compounds are useful as anti-hypertensive agents.

3,772,307
PYRIDYLTHIO KETONES

Daniel Kaminsky, Parsippany, and Mary Wise, Dover, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Nov. 5, 1971, Ser. No. 196,184
Int. Cl. C07d *31/48*
U.S. Cl. 260—294.8 **33 Claims**

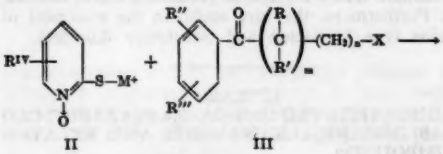
Pyridylthio ketones having the following structural formula are disclosed.



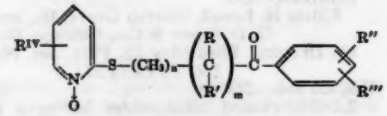
I

In the above R is hydrogen, lower alkyl or phenyl; R′ is hydrogen, lower alkyl or phenyl; R″ and R‴ may be hydrogen, alkyl, halo, alkoxy, alkylthio, methylsulfonyl, methylsulfinyl, nitro, amino, phenyl, or taken together to be methylenedioxy or benzo; R^{IV} may be hydrogen, lower alkyl, halo, nitro or phenyl. The sulfur atom may be oxidized to sulfoxide, sulfone or non-oxidized as the sulfide. The values for *m* and *n* may be 0, 1, 2 or 3. These compounds are useful as antifungal and antibacterial agents. Some of the compounds also exhibit antisecretory and immuno suppressant activity.

The pyridylthio compounds are prepared by the reaction of a salt of a 2-mercapto pyridine-N oxide (II) (M=cationic species) with a suitably substituted compound III (where X=chloro or bromo) in an



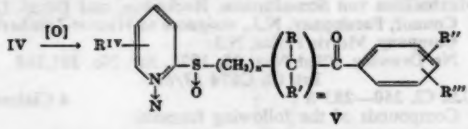
II III



IV

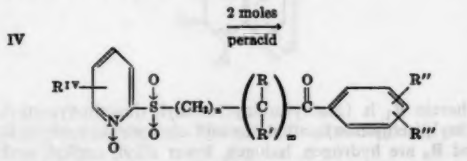
appropriate solvent (such as water, alcohols, DMSO, DMF, acetonitrile, etc.). These reactions are usually carried out above room temperature and when complete, the product is precipitated (if necessary) by addition of water and cooling.

Oxidation of the pyridylthio compounds of type IV with peracids such as m-chloroperbenzoic, performic or peracetic give the pyridylsulfinyl compounds of type V.



V

Oxidation of compounds of type IV with at least two moles of oxidizing agent results in the preparation of keto sulfones of type VI. The same compounds are prepared by the oxidation of sulfoxides of type V.



VI

These compounds are useful as anti-fungal and anti-bacterial agents. Some of the compounds also exhibit anti-secretory and immunosuppressant activity.

3,772,308

CYCLOPENTANEACETAMIDES AND CYCLOPENTANEACETONITRILES

Richard P. Pioch, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed June 2, 1972, Ser. No. 259,185
Int. Cl. C07d *29/30, 29/32*
U.S. Cl. 260—293.76 5 Claims

Cyclopentaneacetamide and cyclopentaneacetonitrile derivatives which have anti-inflammatory activity, and intermediates useful in the preparation thereof.

3,772,309

METHOD FOR PREPARING 2-ARYLBENZAZOLES

Carl S. Marvel, Tucson, Ariz., Jerry G. Higgins, Bloomington, Ill., and Rolf Pense, Frankfurt-Hochst, Germany, assignors to Research Corporation, New York, N.Y.

No Drawing. Original application Feb. 7, 1969, Ser. No. 797,667, now Patent No. 3,630,972, dated Dec. 28, 1971. Divided and this application Apr. 7, 1971, Ser. No. 132,173
Int. Cl. C07d *49/38, 85/48, 91/44*
U.S. Cl. 260—296 B 3 Claims

2-arylbenzazoles, i.e. 2-arylbenzimidazoles, 2-arylbenzoxazoles and 2-arylbenzthiazoles, are prepared by the condensation of an aromatic aldehyde bisulfite adduct with o-phenylenediamine, o-aminophenol and o-thiophenol, respectively.

Polybenzimidazoles, known polymers particularly useful in the fabrication of articles intended for use at elevated temperatures, are prepared by the condensation of aromatic tetraamines with aromatic dialdehyde bisbisulfite adducts.

3,772,310

MANUFACTURE OF 1,1'-DISUBSTITUTED-4,4'-BIPYRIDYLIUM SALTS

John Gerard Carey, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,613
Claims priority, application Great Britain, Aug. 20, 1969, 41,516/69
Int. Cl. C07d *31/44*
U.S. Cl. 260—295 AM 8 Claims

A process for the manufacture of 1,1'-disubstituted-4,4'-bipyridylium salts which comprises reacting an N-substituted pyridinium salt with anions containing the structure >P—O⁻ or >P—S⁻ under basic conditions, and subsequently oxidising the resulting 1,1'-disubstituted-1,1'-dihydro-4,4'-bipyridyl to the corresponding 1,1'-disubstituted-4,4'-bipyridylium salt.

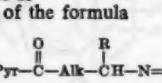
3,772,311

1-ARYLSULFONYLOXY LOWER ALKYL-4-ALKANOYL PYRAZOLES

Vishwa Prakash Arya, Bombay, India, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original application Feb. 13, 1968, Ser. No. 705,013, now Patent No. 3,652,573. Divided and this application Sept. 21, 1971, Ser. No. 182,557
Claims priority, application Switzerland, Mar. 1, 1967, 2,975/67; Jan. 24, 1968, 1,061/68
Int. Cl. C07d *31/48*
U.S. Cl. 260—294.8 R 9 Claims

The compounds of the formula



in which N=Z denotes an N-azacycloaliphatic residue containing 5–8 ring members and at most one carbon-carbon double bond, Pyr denotes a 4-pyrazolyl residue substituted in 1-position by a sulfonyloxyalkyl group, Alk represents a 1:1-lower alkylidene residue, and R denotes a hydrogen atom or a lower alkyl group, or salts thereof have antihypertensive, as well as antitussive or antiinflammatory properties.

3,772,312

OCTAHYDROPYRINDENES

Elmar Sturm, Arlesheim, Hans-Joerg Cellarius, Riehen, and Brigitta von Bredow and Christian Vogel, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,285
Int. Cl. C07d *39/00*
U.S. Cl. 260—293.54 11 Claims

Thio- and dithiocarbamates of octahydro-1-pyrindenes may be used as plant growth inhibitors and as weed-killers in crop cultures.

3,772,313

PYRIDYL ISOCYANATES

Ulrich von Gizycki and Gunter Oertel, Cologne-Flittard, and Gunther Beck and Kurt Findeisen, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 23, 1971, Ser. No. 127,378
Int. Cl. C07d *31/40*
U.S. Cl. 260—296 C 2 Claims

a-Pyridyl, a-pyrimidyl and a-pyrazinyl isocyanates which contain electronegative substituents in the ring are prepared by reacting the corresponding amino compounds with oxalyl chloride. Due to the high reactivity of the —NCO group these compounds are particularly useful as cross linking agents and modifiers for compounds containing Zerewitinoff-active hydrogen.

3,772,314

2 - HYDROXYMETHYL - 3-BENZYLOXY-6-PYRIDINECARBOXALDEHYDES, INTERMEDIATE FOR PREPARING BRONCHODILATORS

Wayne E. Barth, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Original application Feb. 16, 1971, Ser. No. 115,878, now Patent No. 3,700,681, dated Oct. 24, 1972. Divided and this application May 25, 1972, Ser. No. 256,840
Int. Cl. C07d *31/30*
U.S. Cl. 260—297 R 1 Claim

2-hydroxymethyl-3-hydroxy-6-(1-hydroxy - 2 - aminoethyl)-pyridines and salts thereof, a novel class of β-adrenergic agonist bronchodilators in mammals, and 2-hydroxymethyl-3-benzyloxy-6 - pyridinecarboxaldehyde a valuable intermediate in the preparation of the subject compounds.

3,772,315

PROCESS FOR THE PRODUCTION OF 2-ACYLIMIDAZOLES

Erik Regel, Wuppertal-Cronenberg, and Karl-Heinz Buchel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 18, 1970, Ser. No. 38,598
Claims priority, application Germany, May 22, 1969, P 19 26 206.7; Nov. 12, 1969, P 15 56 711.4
Int. Cl. C07d *49/36, 49/38*
U.S. Cl. 260—296 R 4 Claims

The invention relates to 2-acyl-1-alkyl- or -aryl-imidazoles, wherein the 4- and 5-positions of the imidazole ring as well as the 1-alkyl or -aryl substituent may be substituted, which, in the form of their acid addition salts, possess fungicidal activity, and which are also useful as intermediates in further syntheses. The invention also provides a process for producing such compounds by acylation of the corresponding imidazole, unsubstituted in the 2-position, with the appropriate acid halide.

3,772,316
N,N'-METHYLENE-BIS(2-AMINO-1,3,4-THIADIAZOLE)

Osamu Wakae and Kunito Yakushiji, Kyoto, and Yoshiyuki Okada, Osaka, Japan, assignors to Takeda Chemical Industries, Inc., Osaka, Japan

No Drawing. Original application May 13, 1969, Ser. No. 824,251, now abandoned. Divided and this application July 27, 1970, Ser. No. 64,882

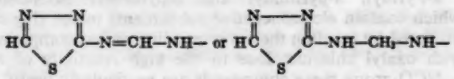
Claims priority, application Japan, May 13, 1968, 43/32,098; Sept. 2, 1968, 43/62,866; Apr. 14, 1969, 44/28,826

Int. Cl. C07d *91/62*

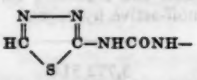
U.S. Cl. 260—306.8 D **1 Claim**

Compounds of the formula

wherein R is amino, lower alkylamino having up to 5 carbon atoms, acyl amino having up to 18 carbon atoms, anilino, substituted or unsubstituted carbamoyl (or thiocarbamoyl) amino, nitrosoamino, nitroamino, lower alkoxymethylidenamino having up to 5 carbon atoms, substituted or unsubstituted phenoxy carbonylamino, substituted or unsubstituted benzene-sulfonamido, lower alkoxy carbonylamino having up to 5 carbon atoms, or a group represented by



or



as well as acid addition salts thereof, are useful in combatting bacterial or fungal plant diseases. Compositions containing the active ingredients are provided.

3,772,317
CERTAIN 2-(3-SUBSTITUTED-4H-1,2,4-TRIAZOL-4-YL)-α-PHENYLBENZYLAMINES

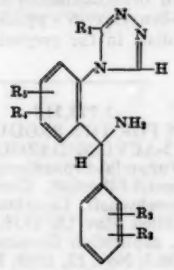
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,921

Int. Cl. C07d *55/06, 57/00*

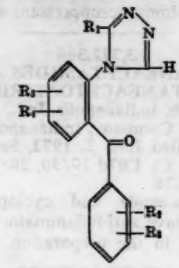
U.S. Cl. 260—308 R **3 Claims**

Compounds of the formula



(IV)

wherein R_1 is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, cycloalkyl of 3 to 8 carbon atoms, inclusive, phenyl, benzyl, —COOR', in which R' is alkyl defined as above, pyrimidyl, pyridyl, and pyrryl; wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl defined as above, cyano, halo, trifluoromethyl, nitro, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoylamino in which the carbon moiety is of 1 to 3 carbon atoms, inclusive, and dialkylamino in which alkyl is defined as above, are prepared by a multistep process from benzophenones of the formula



I

The compounds of Formula IV; their acid amide derivatives (III) and the analogous oximes (II) are active tranquilizing compounds. They are also intermediates in the production of other important tranquilizers and sedatives.

The acid addition salts of these compounds can be also used as tranquilizers and sedatives for mammals.

3,772,318
CERTAIN TRIAZOLOBENZODIAZEPINONE COMPOUNDS AND THEIR PRODUCTION

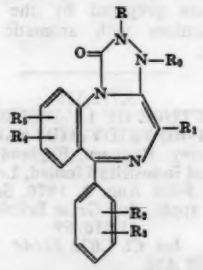
Robert B. Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Dec. 8, 1971, Ser. No. 206,166

Int. Cl. C07d *57/02*

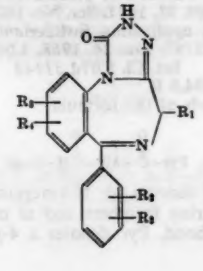
U.S. Cl. 260—308 C **4 Claims**

2,3-disubstituted - 2,3 - dihydro-6-phenyl-1H-s-triazolo-[4,3-a][1,4]benzodiazepin-1-one of the Formula II



II

wherein R and R_0 are selected from the group consisting of alkyl of 1 to 3 carbon atoms, inclusive, and alkenyl of 3 to 4 carbon atoms, inclusive, wherein R_1 is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, and alkenyl of 3 to 4 carbon atoms, inclusive; wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl defined as above, amino, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfonyl, and alkylsulfinyl, alkanoylamino, in which the carbon moieties are of 1 to 3 carbon atoms, incusive, and dialkylamino, in which the alkyl group is defined as above; is prepared by reacting a 2,4-dihydro-1H-s-triazolo[4,3-a][1,4]benzodiazepin-1-one of the formula:



(I)

wherein R_1, R_2, R_3, R_4, and R_5 are defined as above, with a base and then with an alkyl halide or alkenyl halide.

The compounds of Formula II and the pharmacologically acceptable acid addition salts thereof can be used as sedatives and tranquilizers for mammals and birds.

3,772,319

5-AMINO-4-CARBOXAMIDO-2-ARYLIMIDAZOLES

James Heyes, Peaslake, and Neal Ward, Tadworth, England, assignors to Beecham Group Limited, Brentford, Middlesex, England

No Drawing. Filed Aug. 23, 1971, Ser. No. 174,253

Claims priority, application Great Britain, Aug. 27, 1970, 41,261/70

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 9 Claims

Imidazole derivatives having anti-inflammatory properties are described together with pharmaceutical compositions containing the same and procedure for preparing the imidazoles. A representative compound is 5-amino-4-carbethoxy 2-(4'-fluorophenyl)imidazole. The pharmaceutical compositions may be in the form of tablets containing 100 mg. of active ingredient.

3,772,320

N^1-SULFONYL-2-PHENYLHYDRAZINO-2-IMIDAZOLINES

Knut Zellerhoff, Wuppertal-Elberfeld, Siegismund Schutz, Metzkausen, and Wilhelm Stendel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,289

Claims priority, application Germany, Aug. 22, 1970, P 20 41 733.8

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 21 Claims

Phenylhydrazino-2-imidazoline derivatives being a sulfonyl substituent in the N^1-position are acaricidal agents. The compounds, of which 2-(N^1-methanesulfonyl-N^2-phenylhydrazino)-2-imidazoline is a typical embodiment are prepared by treating the appropriate phenylhydrazino-2-imidazoline with a sulfonylating agent.

3,772,321

ANTHRAQUINONE COMPOUNDS

Christian Zickendraht, Binningen, Arthur Buehler, Rheinfelden, and Hans Ulrich Schuetz, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

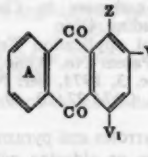
No Drawing. Filed Feb. 10, 1971, Ser. No. 114,400

Claims priority, application Switzerland, Mar. 26, 1970, 4,652/70

Int. Cl. C07d *49/38, 85/48, 91/44*

U.S. Cl. 260—309.2 3 Claims

Anthraquinone compounds of the general formula



wherein Z denotes a hydrogen atom, an —NH_2, —NH-alkyl, NH-aryl or —OH group, V_2 denotes a hydrogen or halogen atom or an alkyl, alkoxy, cyano or sulphonic acid group and V_1 denotes a five-membered heterocyclic radical which is bound via a sulphur atom to the anthraquinone nucleus, contains a further hetero-atom in the ring apart from a ring nitrogen atom, and a sulphonic acid, sulphone or sulphonamide radical or a reactive radical, and wherein the ring A can contain further substituents.

3,772,322

1-CARBAMOYL-2-CARBOALKOXYAMINO BENZIMIDAZOLES

Gerhard Horlein, Frankfurt am Main, Hilmar Mildenberger, Kelkheim, Taunus, Arno Kroniger, Gerbrunn, near Wurzburg, and Kurt Hartel, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

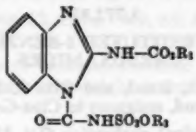
No Drawing. Filed Sept. 7, 1971, Ser. No. 178,459

Claims priority, application Germany, Sept. 7, 1970, P 20 44 205.1

Int. Cl. C07d *49/38*

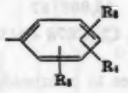
U.S. Cl. 260—309.2 10 Claims

Benzimidazols of the formula



(I)

wherein R_1 is lower alkyl and R_2 is lower alkyl, haloalkyl, alkoxy-alkyl or a radical of the formula



These compounds have anthelmintic, acaricidal, ovicidal and fungicidal activity.

3,772,323

2-BENZIMIDAZOL(2)-BENZOFURANS AS OPTICAL BRIGHTENERS

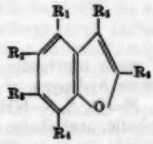
Hans Schläpfer, Basel, and Guglielmo Kabas, Binningen, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed June 12, 1970, Ser. No. 45,922

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 6 Claims

2-benzimidazols(2)-benzofurans useful as optical brighteners have the structure

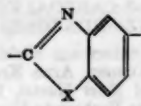


(I)

wherein

R_1 represents hydrogen or together with R_2 and the 2 carbon atoms to which R_1 and R_2 are attached, it represents benzene,

R_2 represents hydrogen, halogen, or together with R_1 and the 2 carbon atoms to which R_1 and R_2 are attached, it represents benzene,
R_3 represents hydrogen, alkyl comprising 1 to 4 carbon atoms, or alkoxy comprising 1 to 4 carbon atoms,
R_4 represents hydrogen or halogen,
R_5 represents hydrogen or alkyl comprising 1 to 4 carbon atoms, or phenyl,
R_6 stands for the following:
(a)



wherein

X represents NR—, wherein R stands for hydrogen, alkyl comprising 1 to 4 carbon atoms, hydroxyalkyl comprising 1 to 4 carbon atoms, phenyl or benzyl or cyclohexyl, and
R_7 represents hydrogen, alkyl comprising 1 to 4 carbon atoms, alkoxy comprising 1 to 4 carbon atoms or halogen.

3,772,324

CERTAIN SUBSTITUTED 1-BENZIMIDAZOLE-CARBOXAMIDES

Stefan Janiak, Basel, and Otto Rohr, Therwil, Switzerland, assignors to Ciba-Geigy AG

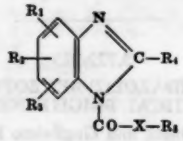
No Drawing. Original application Oct. 22, 1968, Ser. No. 769,699, now Patent No. 3,652,580, dated Mar. 28, 1972. Divided and this application Dec. 2, 1971, Ser. No. 204,299

Claims priority, application Switzerland, Oct. 26, 1967, 15,005/67

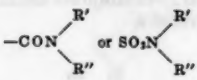
Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **3 Claims**

The invention relates to benzimidazolyl derivatives of the general formula



wherein R_1, R_2 and R_3 may be identical or different and each represents hydrogen, halogen, alkyl, alkoxy, alkylthio, alkylSO—, alkylSO_2—, —NO_2, —CN, CF_3, CHO, COOR',



wherein R' and R'' each represents hydrogen or lower alkyl and R_4 represents hydrogen or an aliphatic or cycloaliphatic residue, X=O, S, —NH— or N-alkyl and R_5 represents an aliphatic, araliphatic or aromatic residue.

These new compounds are very effective as ingredients in bicidal preparations for plant-protection and combating insects, acarides, nematodes, endoparasites and microbes.

3,772,325

NOVEL HEXAHYDRO CYCLOHEPT[b]INDOLES

Joseph William Epstein, Monroe, and Leon Goldman, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,977

Int. Cl. C07d *49/18*

U.S. Cl. 260—311 **1 Claim**

This disclosure describes 5,6,7,8,9,10 - hexahydro -2-methoxy-5-methylcyclohept[b]indole; 5,6,7,8,9,10 - hexahydro-2-methoxycyclohept[b]indol - 6 - ol; and 4,5,6-11-tetrahydro-8-methoxy-2H - pyrazolo[4',3':6,7]cyclohept-[1,2-b]indole; all three useful as antifungal agents.

3,772,326

DIGLYCIDYL COMPOUNDS OF MONOHYDROXYALKYL HYDANTOINS

Hans Batzer, Arlesheim, Juergen Habermeier, Pfeffingen, and Daniel Porret, Binningen, Switzerland, assignors to Ciba-Geigy AG

No Drawing. Continuation-in-part of application Ser. No. 870,547, Nov. 4, 1969, now Patent No. 3,629,263. This application Dec. 20, 1971, Ser. No. 210,211

Claims priority, application Switzerland, Nov. 11, 1968, 16,803

The portion of the term of the patent subsequent to Dec. 21, 1988, has been disclaimed

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **3 Claims**

New compounds, namely 1-glycidyl-3-(2'-glycidyloxyethyl)-5,5-dimethylhydantoin and 1-glycidyl-3-(2'-glycidyloxy-n-propyl)-5,5-dimethylhydantoin, which are especially distinguished in that the mouldings obtained therefrom by curing, and in particular by anhydride curing, possess considerably high heat distortion points according to Martens (DIN 53,458).

3,772,327

RHEADAN-TYPE ALKALOIDS AND THE PREPARATION THEREOF

Arnold Brossi, Verona, Wilhelm Kloetzer, East Orange, and Sidney Teitel, Clifton, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 141,979, May 10, 1971. This application July 27, 1971, Ser. No. 166,582

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 **5 Claims**

The present invention relates to the preparation of novel rheadan-type alkaloids and to novel intermediates useful in the preparation thereof. The process utilizes as starting materials a known class of alkaloids of the narcotine or of the hydrastine type. Certain of the said novel intermediates are also pharmaceutically useful in and of themselves. Additionally, certain of the novel intermediates can be converted into other type alkaloids which are also pharmaceutically useful.

3,772,328

PREPARATION OF PYRROLES BY CYCLIZATION OF AZINES

Christian H. Stapfer, Newtown, and Richard W. D'Andrea, New Hope, Pa., assignors to Cincinnati Milacron Chemicals Inc., Reading, Ohio

No Drawing. Original application Feb. 26, 1970, Ser. No. 14,628, now Patent No. 3,666,772. Divided and this application Dec. 3, 1971, Ser. No. 204,691

Int. Cl. C07d *27/20, 49/10*

U.S. Cl. 260—313.1 **7 Claims**

Alkyl substituted pyrroles and pyrazolines are prepared by treating a ketazine or aldazine with a metal halide of the formula MX_2 where M is cobalt or nickel and X is a halogen at a temperature of 10 to 300° C.

3,772,329

7-SULFAMOYL INDOLE DERIVATIVES

Paul S. Huyffer, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Jan. 21, 1971, Ser. No. 108,663

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.12 R 3 Claims

This invention relates to indoles substituted in the 7-position with a sulfonamido or sulfamoyl group which are useful as intermediates in the preparation of indole indicator dyes, such as, indole phthaleins.

3,772,330

2-PHENYLAMINO-Δ^1-PYRROLINES

Edgar Enders, Cologne, and Wilhelm Stendel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 16, 1970, Ser. No. 81,514

Claims priority, application Germany, Oct. 23, 1969, P 19 53 344.9

Int. Cl. C07d *27/14*

U.S. Cl. 260—326.9 7 Claims

2-phenylamino-Δ^1-pyrrolines, i.e. 2-(di-substituted phenyl-alkyl or alkenylamino)-Δ^1-pyrrolines wherein the alkyl or alkenyl group contains up to eight carbon atoms and one of the two substituents on the phenyl ring is halogen and the other halogen or lower alkyl, one of the two being in 4-position, and their salts, which possess parasiticidal properties, especially animal acarid ectoparasiticidal properties, and processes for their preparation.

3,772,331

1,3-DITHIETANES

Stanley A. Greenfield, Ambler, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,297

Int. Cl. C07d *69/00*

U.S. Cl. 260—327 M 6 Claims

Novel 2-sulfonylimino-1,3-dithietanes and 2-methylene-1,3-diethietanes are described. These compounds, and related known ones, possess herbicidal, microbiocidal, molluscicidal and nematocidal properties.

3,772,332

TETRAHYDROPYRANYL AND TETRAHYDROTHIAPYRANYL PHENYLACETIC ACID COMPOUNDS

Andre Allais, Les Lilas, Jean Meier, Coeuilly-Champigny, and Jacques Dube, Eaubonne, France, assignors to Roussel UCLAF, Paris, France

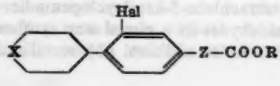
No Drawing. Continuation of abandoned application Ser. No. 55,221, July 15, 1970. This application Apr. 12, 1972, Ser. No. 243,455

Claims priority, application France, July 18, 1969, 6924537

Int. Cl. A61k *27/00*; C07d *65/04*

U.S. Cl. 260—327 TH 20 Claims

Novel compounds of the formula



(I)

wherein X is selected from the group consisting of oxygen, sulfur, SO and SO_2, R is selected from the group consisting of hydrogen, anion of a non-toxic, therapeutically acceptable organic or mineral base and residue of an alcohol, and Z is selected from the group consisting of $—CHR_1—$ and $>C=R_2$ wherein R_1 is selected from the group consisting of hydrogen and straight or branched alkyl of 1 to 4 carbon atoms, and R_2 is a straight or branched alkylidene of 1 to 4 carbon atoms and Hal is selected from the group consisting of fluorine, bromine and chlorine, which compounds which contain at least one asymmetric carbon atom can be in racemic or optically active form, and their preparation which compounds have analgesic and anti-inflammatory activity.

3,772,333

BENZOXANTHENE AND BENZOTHIOXANTHENE DYESTUFFS

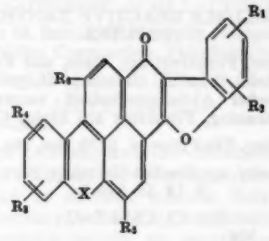
Ernst Spietschka, Oberauroff, Taunus, and Jurgen Hohn, Kelsterbach, and Helmut Troster, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 20, 1971, Ser. No. 145,526

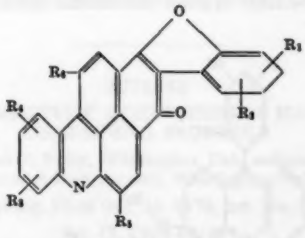
Int. Cl. C07d *7/42, 65/16*

U.S. Cl. 260—327 6 Claims

Benzoxanthene or benzothioxanthene dyestuffs consisting of a mixture of isomers of the formulae



(1)



(2)

in which X is oxygen or sulfur, R_1 and R_2 are hydrogen or halogen, alkyl, aryl, alkoxy, acyl, acyloxy, carbalkoxy, nitro, alkylthio or alkylsulfonyl, R_3 and R_4 are hydrogen or halogen, alkyl, alkoxy, aryl, carbalkoxy or cyano, R_5 and R_6 are hydrogen or optionally substituted alkoxy. The dyestuffs have orange to bluish red shades and may be used for dyeing and printing of synthetic materials as well as for mass dyeing of synthetic fiber-forming polymers. The dyeings thus obtained are distinguished by a high brilliance of shade, good fastness properties to light and very good fastness properties to wet processing and thermofixation. Furthermore, the dyestuffs may be used as fluorescent dyestuffs for the coloring of synthetic polymers in the melt.

3,772,334

ANILIDE DITHIOLANES AND DITHIANES

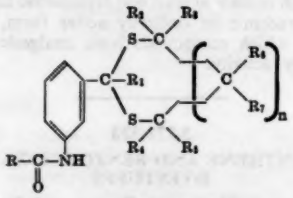
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,484

Int. Cl. C07d 71/00, 73/00

U.S. Cl. 260—327 M 13 Claims

Substituted anilide dithiolane and dithiane compounds having the formula



in which R is selected from the group consisting of alkyl, lower haloalkyl and substituted phenyl, wherein said substituents are selected from the group methyl, chloro and dichloro; R_1, R_2, R_3, R_4, R_5, R_6 and R_7 each are independently selected from the group consisting of hydrogen and lower alkyl; and n is 0 or 1. These compounds are useful as herbicides.

3,772,335

WATER-SOLUBLE REACTIVE XANTHENIUM DYESTUFFS

Fritz Meininger, Frankfurt am Main, and Folker Kohlhaas, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

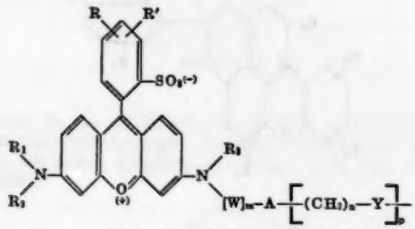
No Drawing. Filed Nov. 4, 1970, Ser. No. 86,941

Claims priority, application Germany, Nov. 6, 1969, P 19 55 849.7

Int. Cl. C07d 7/42

U.S. Cl. 260—336 9 Claims

A water-soluble reactive xanthenium dyestuff of the Formula 1

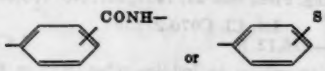


(1)

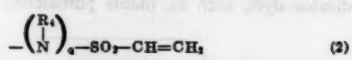
wherein R represents hydrogen, chlorine, hydroxyl, lower alkoxy, lower alkyl, carboxyl or a sulfonic acid group, R′ represents hydrogen or carboxyl, R_1 stands for lower alkyl, carboxyl-lower alkyl, HO_3S lower alkyl,

$$HO_3S—O—$$

lower alkyl, lower alkyl-phenyl or cyclohexyl, R_2 stands for hydrogen, lower alkyl, carboxyl-lower alky, and R_1 and R_2 represent together with the nitrogen atom morpholyl or piperidyl, R_3 represents hydrogen or lower alkyl, A stands for phenylene, biphenylene, naphthylene, nitro diphenylamine, lower alkyl-azo-phenyl, lower alkyl-phenylene, lower alkoxy-phenylene, lower alkyl-alkoxy-phenylene, carboxy-phenylene, hydroxy-phenylene, monosulfophenylene, chlorophenylene, and W represents as a bivalent bridging member —CH_2—, —NH—,

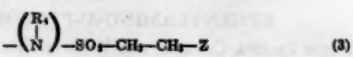


Y represents a grouping of the formula



(2)

or



(3)

wherin Z stands for hydroxyl or chlorine, an arylsulfonic acid ester group, lower alkylsulfonic acid ester group, thiosulfuric acid ester group, phosphoric acid ester group, sulfuric acid ester group, dialkylamino, acetyl or phenoxy, R_4 represents hydrogen or lower alkyl, m and n stand for 0, 1 or 2, q for 0 or 1 and p for 1 or 2, said said dyestuffs being suitable for the dyeing or printing of leather, wool, silk or polyamide or polyurethane fibres, and particularly of native or regenerated cellulose fibres, the dyeings and prints obtained on said fibrous materials being distinguished by bluish red to violet shade and by good fastness to wet processing.

3,772,336

4H-[1]BENZOTHIENO[3,2-β]PYRAN-4-ONE-2-CARBOXYLIC ACIDS AND RELATED COMPOUNDS

John B. Wright, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 148,188, May 28, 1971. This application Apr. 25, 1972, Ser. No. 247,308

Int. Cl. C07d 63/22

U.S. Cl. 260—330.5 7 Claims

Compounds of Formula I, below, possess anti-anaphylactic properties and find use in the treatment of anaphylaxis and as anti-allergy agents, such as the treatment of allergic bronchial asthma.

3,772,337

2-ACETAL-7-KETAL-5-NORBORNENE AND 2-ACETAL-7-KETALNORBORNANE COMPOUNDS

Frederick Lynn Hamb, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

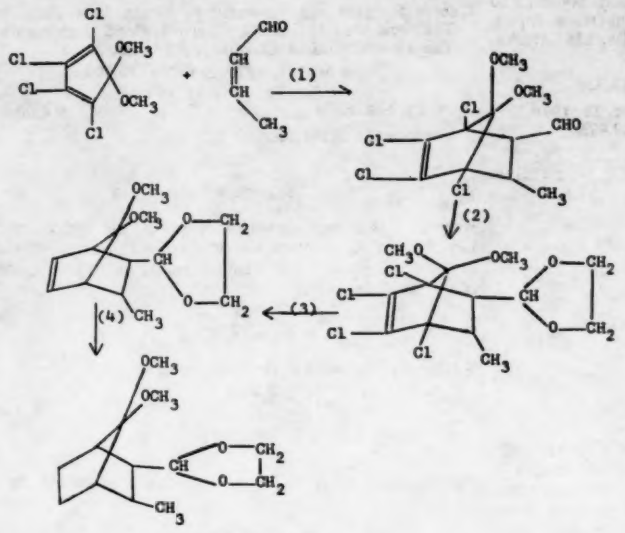
No Drawing. Original application Oct. 4, 1968, Ser. No. 765,036. Divided and this application May 13, 1971, Ser. No. 143,273

Int. Cl. C07d 13/04

U.S. Cl. 260—340.9 4 Claims

2-acetal-7-ketal-5-norbornene compounds, such as 2-(1,3 - dioxolan - 2 - yl) - 3 - methyl - 7,7 - dimethoxy - 5-norbornene, and the corresponding norbornane compounds, for example, 2-(1,3-dioxolan-2-yl)-3-methyl-7,7-dimethoxynorbornane, are central nervous system depressants; and in addition, the norbornene compounds exhibit anticonvulsant activity. These compounds are synthesized from 1,2,3,4-tetrachloro-5-ketalcyclopentadienes and α,β-unsaturated aldehydes in a plural step synthesis comprising (1) a Diels-Alder addition, (2) acetalization (3) de-

chlorination and, in the case of the norbornane compounds, (4) hydrogenation, as is illustrated by the following equations:



and accurate and eliminates the necessity of the culturing techniques employed in the past.

3,772,338

NAPHTHALIDES AND THEIR PREPARATION

Richard B. Greenwald, Framingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,638

Int. Cl. C07d 7/26

U.S. Cl. 260—343.2 R 19 Claims

This invention relates to the synthesis of naphthol naphthalide indicator dyes by reacting a 3-halo-3-(4'-hydroxy naphthyl)naphthalide and a 1-naphthol in the presence of a heavy metal salt as catalyst.

3,772,339

PREPARATION OF NAPHTHALIDES

Richard B. Greenwald, Framingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,637

Int. Cl. C07d 7/26

U.S. Cl. 260—343.2 R 13 Claims

This invention relates to the synthesis of carboxy-substituted naphthol naphthalide indicator dyes by reacting a 3-(3'-carboalkoxy-4'-hydroxy naphthyl)naphthalide intermediate and a 1-naphthol in the presence of a Lewis acid catalyst and converting the 3'-carboalkoxy to a 3'-carboxy group to yield the dye product.

3,772,340

BIS(COUMARINYL)PHOSPHATES

Nagesh Shamrao Mhatre and Robert Charles Boguslaski, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Original application July 13, 1970, Ser. No. 54,630, now abandoned. Divided and this application May 2, 1972, Ser. No. 249,735

Int. Cl. C07d 7/26

U.S. Cl. 260—343.2 P 8 Claims

A novel test system for determining the number and type of bacteria present in fluids such as infected urine is disclosed as well as certain new organic phosphates which may be utilized in such a test. The test is specific, rapid

3,772,341

SUBSTITUTED 2,5-DIPHENYL-3,4,6-TRIHYDROXY-$\Delta^{2,4}$-HEXADIENOIC ACID LACTONES (1,4)

Blaine M. Sutton, Hatboro, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed June 1, 1971, Ser. No. 148,890

Int. Cl. C07d 5/10

U.S. Cl. 260—343.6 2 Claims

2,5-diphenyl-3,4,6-trihydroxy-$\Delta^{2,4}$-hexadienoic acid lactones (1,4) in which the phenyl moieties are each optionally substituted by chlorine, bromine, fluorine, methyl, methoxy, dimethoxy, trimethoxy or trifluoromethyl and having anti-arthritic activity are generally prepared by diborane reduction of corresponding pulvinic acid derivatives.

3,772,342

POLYCARBOXYLIC ACID ESTERS OF HALOGEN CONTAINING ALCOHOLS

Kendall F. Foley, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,935

Int. Cl. C07c 69/82

U.S. Cl. 260—475 R 9 Claims

Benzene polycarboxylic acid esters of halogen containing monohydric alcohols having the halogen groups in a neopentyl type of structure are described. The esters, representative of which are di[2,2-bis(halomethyl)-3-halopropyl]terephthalate, di[2,2-bis(halomethyl)-3-halopropyl]isophthalate, tri[2,2 - bis(halomethyl)-3-halopropyl] trimesate and di[2,2-bis(halomethyl)-3-halopropyl]tetrahaloterephthalate, can be produced by esterifying the isophthalic, terephthalic or trimesic acid or their acid halides with the appropriate 2,2-bis(halomethyl)-3-halo-1-propanols or by transesterification techniques. The esters are of particular value as flame retardants for synthetic resins and particularly polyolefins and polyesters.

3,772,343

ALKYL 5-(HYDROXYCYCLOHEXYL)INDAN-1-CARBOXYLATE AND DERIVATIVES THEREOF

Shunsaku Noguchi, Osaka, Kiyohisa Kawai, Kyoto, and Yoshio Kanai, and Shigeharu Tanayama, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

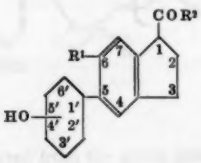
Filed Dec. 21, 1971, Ser. No. 210,336

Claims priority, application Japan, Dec. 29, 1970, 46/128,941; May 6, 1971, 46/29,975

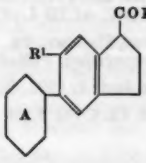
Int. Cl. C07c *69/76*

U.S. Cl. 260—473 F 12 Claims

Novel compounds of the formula



(wherein R^1 is hydrogen or a halogen and R^2 is hydroxy, alkoxy, amino group or OMe in which Me means a metal), which are useful for anti-inflammatories, analgesics, anti-pyretics, anti-rheumatics, etc. and intermediates for production of the above objective compounds, which are represented by the formula



(wherein the cyclohexane ring A has a free or protected oxo group and R^1 and R^2 have the meaning defined above).

3,772,344

METHANESULFONIC ACID ESTERS OF 4-TRIFLUOROMETHYLPHENOLS

Horst Tarnow, Leverkusen, Klaus Sasse, Schildgen, and Bernard Homeyer, Opladen, Germany (all % Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany)

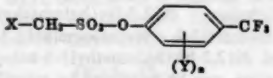
No Drawing. Filed Oct. 20, 1971, Ser. No. 191,073

Claims priority, application Germany, Oct. 23, 1970, P 20 52 027.8

Int. Cl. C07c *143/69*

U.S. Cl. 260—456 P 6 Claims

Methanesulfonic acid esters of 4-trifluoromethylphenols of the general formula



(I)

in which

X is hydrogen, chlorine or bromine,
Y is chlorine or bromine, and
n is an integer from 0 to 4,
which possess nematocidal, insecticidal, acaricidal, and fungicidal properties.

3,772,345

PROCESS FOR PREPARING N-ALKYLTHIOALKYL-O-ALKYLTHIOCARBAMATES AND N-ALKYLTHIOALKYL-O-ALKYLCARBAMATES

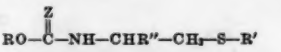
George E. Ham and Benjamin V. Alcala, Lake Jackson, Tex., and Guy H. Harris, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 8, 1970, Ser. No. 70,399

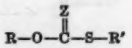
Int. Cl. C07c *155/08*

U.S. Cl. 260—455 A 9 Claims

Compounds of the formula



wherein Z is oxygen or sulfur, R and R′ are hydrocarbyl radicals and R″ is hydrogen or lower alkyl, are prepared in the novel process comprising reacting (a) a compound of the formula



with (b) an aziridine of the formula

The compounds are useful in the flotation of sulfide ores.

3,772,346

ANTIWETTING METHOD AND COMPOSITIONS

Patrick Henry Hess, Diamond Bar, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application Aug. 1, 1966, Ser. No. 569,036, now Patent No. 3,620,820. Divided and this application Mar. 9, 1970, Ser. No. 22,724

Int. Cl. C07f *7/18*

U.S. Cl. 260—448.8 R 5 Claims

Novel silico-fluorocarbon compounds useful for rendering siliceous surfaces resistant to water wetting.

3,772,347

TRANSITION METAL CATALYZED SILYLATIONS

William H. Atwell and Gary N. Bokerman, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,413

Int. Cl. C07f *7/12*

U.S. Cl. 260—448.2 E 8 Claims

The reaction between disilanes and hydrocarbon chlorides to produce R'_nSiCl_{4-n} is catalyzed with M',

$$M(PR''_3)_2X_2$$

or $M'(PR''_3)_2Si(R_aCl_{3-a})_mX_{2-m}$. Specifically, hexachlorodisilane is reacted with allyl chloride in the presence of $Pd\{P(CH_3)_2C_6H_5\}_2Cl_2$ to give allyl trichlorosilane.

3,772,348

DERIVATIVES OF DIBENZO[b,f]PYRROLO[3,4-d] AZEPINE AS CNS-DEPRESSANTS

Hans Blattner, Riehen, Switzerland, and Walter Schindler, deceased, late of Basel, Switzerland, by Leonhard Gysin, executor, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed May 11, 1971, Ser. No. 142,390

Claims priority, application Switzerland, May 13, 1970, 7,069/70

Int. Cl. C07d *27/36*

U.S. Cl. 260—326.9 15 Claims

Compounds of the class of 1,2,3,8-tetrahydrodibenzo-[b,f]pyrrolo[3,4-d]azepines which may be substituted in

the 5- or 6- and/or 8-position by chlorine, the trifluoromethyl group or alkyl groups respectively or the allyl group respectively and pharmaceutically acceptable addition salts thereof have a depressant effect on the central nervous system; they can be prepared from the corresponding N-substituted 10,11-bis-bromomethyl - 5H - dibenz[b,f]azepines and a primary amine; the compounds are active ingredients of pharmaceutical compositions.

3,772,349

ALKYL PEROXIDES

John Richard Joy, Stevenson, Md., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Oct. 21, 1970, Ser. No. 82,854

Int. Cl. C07f 7/12, 7/18

U.S. Cl. 260—448.2 B 4 Claims

Described herein are hydrolyzable functional silyl alkyl alkyl peroxides having the following general formula

$$X_{3-n}(R_n)SiR'OOR''$$

wherein X is a hydrolyzable group, R is hydrogen or a monovalent organic radical which is bonded to the silicon atom through a carbon to silicon bond, R' is an alkenylene, cycloalkenylene, alkarylalkylene, or aralkylene, R'' is an alkyl or aralkyl, and n is 0 to 2 inclusive. These hydrolyzable silyl alkyl alkyl peroxides are useful as initiators for the polymerization of monomers having olefinic unsaturation and are also useful in forming silicones.

3,772,350

SILYLATED DERIVATIVES OF PROSTANOIC ACID AND PROSTAGLANDINS

John E. Pike and William P. Schneider, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 71,390, Sept. 11, 1970. This application July 2, 1971, Ser. No. 159,478

Int. Cl. C07f 7/18

U.S. Cl. 260—448.8 R 22 Claims

Novel methods are disclosed for transforming PGA_2 and 15β-PGA_2 and their acetates, methyl esters, and acetate methyl esters to various prostanoic acids and esters of the PGE_2 and $PGF_{2\alpha}$ series. Some of the latter are novel and are useful for the same pharmacological purposes as PGE_2 and $PGF_{2\alpha}$.

3,772,351

UREA-FUNCTIONAL ORGANOSILICON COMPOUNDS

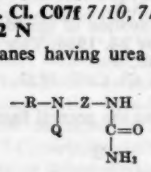
Robert H. Krahnke, Midland, Mich., assignor to The Dow Corning Corporation, Midland, Mich.

No Drawing. Original application Oct. 12, 1970, Ser. No. 80,191, now Patent No. 3,702,860. Divided and this application May 17, 1972, Ser. No. 254,020

Int. Cl. C07f 7/10, 7/18

U.S. Cl. 260—448.2 N 8 Claims

Silanes and siloxanes having urea functionality in the form of a



in which R is a divalent hydrocarbon radical free of aliphatic unsaturation of from 3–18 inclusive carbon atoms, Z is an ethylene, propylene, or substituted ethylene or propylene radical and Q is a hydrogen atom or a urea radical, are useful as sizing agents for glass fibers and as additives in the preparation of crease resistant resins.

3,772,352

ALUMINUM ALCOHOLATES OF N-ACETYL-p-AMINOPHENOL

Martin M. Rieger, Morris Plains, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Nov. 22, 1971, Ser. No. 201,177

Int. Cl. C07f 5/06

U.S. Cl. 260—448 AD 1 Claim

The present invention relates to aluminum alcoholates of N-acetyl-p-aminophenol. N-acetyl-p-aminophenol itself is a well-known analgesic which, when changed to these compounds, is considerably improved in taste.

3,772,353

SILYL ACYL PEROXIDES AND ACYL PEROXY POLYSILOXANES

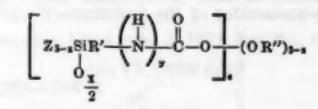
John Richard Joy, Stevenson, Md., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Oct. 21, 1970, Ser. No. 82,817

Int. Cl. C07f 7/02

U.S. Cl. 260—448.2 N 4 Claims

There is described herein silyl acyl peroxy compounds containing at least one of the following structures;



wherein:

R' is a divalent hydrocarbon such as alkylene or aralkylene;

R'' is alkyl or aralkyl;

Z is one or more of a monovalent hydrolyzable radical or monovalent organic radical bonded to Si by a carbon to silicon bond;

x is an integer from 0 to 3 inclusive; when x is greater than 0 the oxygen is bonded to another silicon atom whereby to form a siloxane;

y is 0 or 1;

z is 1 or 2; and

provided that when y is 0, the acyl carbonyl carbon atom is bonded to a carbon atom of R'; the R' having at least two sequential carbon atoms separating the acyl carbonyl carbon from the silicon; and further provided that when y is 1, z is 1 and the nitrogen atom is bonded to a carbon atom of R', the R' having at least 3 sequential carbon atoms separating the nitrogen from the silicon. These compounds are useful as coupling agents and binders for polymer, rubber, siliceous, metal oxide and metallic substrates.

3,772,354

STABILIZERS AND POLYOLEFIN COMPOSITIONS CONTAINING SAME

Richard A. Fredricks, Seekonk, Charles H. Nelson, Mattapoisett, and David J. Zepka, Brockton, Mass., assignors to ICI America, Inc., Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 49,903, June 25, 1970. This application Dec. 2, 1971, Ser. No. 204,370

Int. Cl. C07f 15/04, 13/00, 1/08

U.S. Cl. 260—429 J 6 Claims

A transition metal complex of 3,3'-methylene-bis-(5-tert.-butyl-2,4-dihydroxy benzophenone). The complex can be used to stabilize polyolefins against ultraviolet light.

3,772,355
PROCESS FOR THE MANUFACTURE OF TERTIARY BUTYLATES

Juerg Merz, Therwil, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Aug. 6, 1971, Ser. No. 169,837
Claims priority, application Switzerland, Aug. 11, 1970, 12,030/70
Int. Cl. C07f 7/00, 9/00, 11/00
U.S. Cl. 260—429 R 9 Claims

A process for the manufacture of metal tertiary butylates is provided. Metal alcoholates of metals of the Subgroups IV*b*, V*b* or VI*b* of the Periodic System of Elements are reacted with an excess of tertiary butanol at reflux temperature of the reaction mixture and the solvent is slowly distilled of simultaneously or only after a certain time of refluxing or in portions during the whole reaction time.

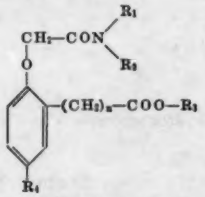
The metal tertiary butylates obtained are known cross-linking curing and polymerisation catalysts.

3,772,356
PHENOXY-ACETAMIDES

Jacques de Antoni, Gif-sur-Yvette, and Raymonde Eche, Paris, France, assignors to Les Laboratories Bruneau & Cie, Paris, France

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,219
Claims priority, application France, Mar. 26, 1970, 10,889; Mar. 18, 1971, 9,505
Int. Cl. C07c 103/30
U.S. Cl. 260—471 R 5 Claims

Phenoxy-acetamides of the formula:



in which R_1 is lower alkyl, R_2 is lower alkyl or lower alkoxy, R_3 is lower alkyl, lower alkenyl, or lower alkynyl, R_4 is halogen, and n is 0 to 4, are useful short duration narcotics.

3,772,357
ORGANOBORON COMPOUND

Hiroyoshi Hamanaka, Tokyo, Japan, assignor to Toho Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Dec. 4, 1969, Ser. No. 882,342
Int. Cl. C07d 107/02; C08k 1/60; B01f 17/34
U.S. Cl. 260—410.7 4 Claims

The present invention relates to an organoboron compound having a new structure, more specifically to an organoboron compound characterized by a dislocation of its structure which is normally in non-ionic condition but may assume an anionic condition chracterized by surface activity; to a process for producing this organoboron compound, and to its application as an antistatic agent, emulsifier and heat-resistance improving agent for synthetic resins.

3,772,358
SYNTHESIS OF ALIPHATIC AMINO AND/OR CARBOXY COMPOUNDS

André Lang, Billere, France, assignor to Societe Nationale des Petroles d'Aquitaine, Tour Aquitaine, Courbevoie, France

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,377
Claims priority, application France, Dec. 24, 1969, 6944820
Int. Cl. C09f 7/00; C07c 99/00
U.S. Cl. 260—404 6 Claims

Aliphatic alpha, omega-diamino, dicarboxy or aminocarboxy compounds are synthesized by reacting a nitrogen oxide with an unsaturated cyclic hydrocarbon to form a pseudo-nitrosite, isomerizing the pseudo-nitrosite into the corresponding nitroketoxime, treating the nitroketoxime with an acid, and thereafter treating the resulting product to transform it into the desired compound. The process is particularly interesting for the manufacture of aliphatic omega-amino carboxylic acids which are used in the manufacture of polyamides.

3,772,359
POLYAMIDE-CONTAINING MANNICH REACTION PRODUCTS AS LUBRICANT ADDITIVES

Roland T. Schlobohm, Bethalto, Ill., and Herbert D. Millay, Dunwoody, Ga., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 635,636, Mar. 3, 1967, which is a division of application Ser. No. 472,701, July 16, 1965, now Patent No. 3,326,801, dated June 20, 1967. This application Oct. 22, 1969, Ser. No. 868,585
Int. Cl. C09f 7/00
U.S. Cl. 260—404.5 2 Claims

Reaction products of (1) a polyamide of an iso-fatty acid and a polyalkylene polyamine and (2) a mixture of an aldehyde and an alkyl hydroxy aromatic compound, are useful as lubricant additives.

3,772,360
ADAMANTYL SUBSTITUTED GLYCEROPHOSPHORYL (AND PHOSPHONYL) ETHANOLAMINES

Francis R. Pfeiffer, Cinnaminson, and Jerry A. Weisbach, Cherry Hill, N.J., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Original application July 1, 1969, Ser. No. 838,327, now Patent No. 3,705,213. Divided and this application May 5, 1972, Ser. No. 250,830
Int. Cl. A23j 7/00; C07f 9/02
U.S. Cl. 260—403 2 Claims

The compounds are adamantyl substituted glycerophosphoryl (and phosphonyl) ethanolamines having renin inhibitory activity.

3,772,361
PROCESSES FOR PREPARING 25-HYDROXYCHOLECALCIFEROL

Hector Floyd Deluca, Madison, Wis., and John Wilson Blunt, Christchurch, New Zealand, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

No Drawing. Filed Dec. 9, 1968, Ser. No. 789,638
Int. Cl. C07c 169/60, 171/08
U.S. Cl. 260—397.2 2 Claims

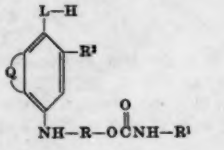
Method for preparing 25-hydroxycholecalciferol from chloest-5,7-dien-3β,25-diol; methods for preparing cholest-5,7-dien-3β-25-diol and the new compound cholest-5,7-dien-3β,25-diol.

3,772,362
ANTHRAQUINONE COMPOUNDS

Max A. Weaver, David J. Wallace, and James M. Straley, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 560,093, June 24, 1966. This application Apr. 19, 1972, Ser. No. 245,399
Int. Cl. C09b 1/32, 1/50
U.S. Cl. 260—377 4 Claims

Compounds having the general formula



in which —L—H is an amino group, R^2 is hydrogen, alkyl, alkoxy, cyano or halogen, R is an organic bridging group, R^1 is alkyl, cyclohexyl, aralkyl, or aryl, and Q is a phthaloyl residue. The disclosed compounds produce blue shades on synthetic fibers and exhibit excellent fastness properties.

3,772,363

3,4,10-TRIOXO OCTAHYDROANTHRACENE-2-AMINOACETIC ACIDS AND DERIVATIVES THEREOF

Lloyd H. Conover, Barham, near Canterbury, England, and Robert B. Woodward, Belmont, Mass., assignors to Pfizer Inc.

No Drawing. Original application Oct. 31, 1969, Ser. No. 873,077, now Patent No. 3,697,552. Divided and application Aug. 1, 1966, Ser. No. 569,052, which in turn is a continuation-in-part of abandoned application Ser. No. 209,269, July 11, 1962, which in turn is a continuation-in-part of abandoned application Ser. No. 132,304, Aug. 18, 1961. This application Mar. 7, 1972, Ser. No. 232,631

Int. Cl. C07c *49/76*

U.S. Cl. 260—351 **6 Claims**

The total synthesis of tetracycline-type antibiotics by a multistep process beginning with 3,4,10-trioxo-1,2,3,4,4a,9,9a,10-octahydroanthracenes comprising: (1) an aldol condensation with a glyoxalic acid ester to give a 2-carboxymethylidene - 3,4,10 - trioxo - 1,2,3,4,4a,9,9a,10-octahydroanthracene ester; (2) Michael reaction of said ester with an amine to produce a 3,410-trioxi-1,2,3,4,4a,9,9a,10-octahydroanthracene-2-(α-amino)acetic acid ester; (3) conversion of the triketone to the corresponding 4,10-diketone by (a) selective reduction of the Michael reaction product to the corresponding 3-hydroxy compound, followed by conversion of the 3-hydroxy compound to the corresponding 3-formyloxy compound and removal of the 3-formyloxy group by treatment with zinc dust to give a 4,10-dioxo-1,2,3,4,4a,9,9a,10-octahydroanthracene-2-(α-amino)acetic acid ester; or (b) conversion of the hydrochloride salt of the Michael reaction product to a lactone by reaction with p-toluene-sulfonic acid and treatment of the lactone with zinc dust formic acid; (4) conversion of the 4,10-diketo-1,2,3,4,4a,9,9a,10-octahydroanthracene-2-(α-amino)acetic acid to a mixed anhydride; (5) followed by acylation of a malonic acid ester with the mixed anhydride; (6) cyclization of the acyl malonate derivative to a 12a-deoxytetracycline which is then hydroxylated to a tetracycline. The preparation of the 3,4,10-trioxo-1,2,3,4,4a,9,9a,10-octahydroanthracenes from benzoyl halides by (a) Friedel-Crafts reaction of a benzoyl halide with a pyrocatechol ether, e.g., a di-(lower)alkyl ether, to produce a 3,4-di-(lower)alkoxybenzophenone; (b) conversion of the benzophenone by partial or complete reduction of the carbonyl group by chemical or catalytic methods to a 3,4-di-(lower)alkoxy diphenyl methanol or 3,4-di(lower)alykoxy diphenyl methane; or to a 3,4-di-(lower)alkoxy diphenyl alkane via a Grignard reaction and reduction of the thus-produced alkanol; (c) oxidation of the 3,4-di-(lower)alkoxy diphenyl alkane, or the corresponding dihydroxy compound, to a dienedioic acid ester or dienedioic acid; (d) hydrogenation of the dienedioic acid compound to a benzyl alipic acid derivative; (e) cyclization of said compound to a 2-(2-carbalkoxyethyl)-4-tetralone by means of dehydrating or dehydrohalogenating agents; (f) cyclization of the 4-tetralone derivatives by condensation with a dialkyloxalate to give a 2-carbalkoxy 3,4,10-trioxo-octahydroanthracene; and (g) removal of the 2-substituent by decarboxylation. The intermediates and final products are useful as bactericides and/or chelating agents.

3,772,364

METHOD OF OBTAINING THE OPTICAL ANTIPODES D(—)- AND L(+)-ALPHA-AZIDOPHENYLACETIC ACID

Günter Bison, Troisdorf-Sieglar, Paul Janssen, Bensberg-Refrath, and Hans Schübel, Siegburg-Seligenthal, Germany, assignors to Dynamit Nobel Aktiengesellschaft

No Drawing. Filed May 23, 1972, Ser. No. 256,055

Claims priority, application Germany, June 5, 1971, P 21 27 991.4; Dec. 18, 1971, P 21 63 032.0

Int. Cl. C07c *117/00*

U.S. Cl. 260—349 **13 Claims**

A method for the preparation of an optically active form of α-azidophenylacetic by contacting DL-α-azidophenylacetic with an optically active form of α-phenylethylamine, recovering a diastereomeric salt thereof and crystallizing out of said salt an optically active form of said α-azidophenylacetic acid; the diastereomeric salt of an optically active form of α-azidophenylacetic acid and an optically active form of α-phenylethylamine.

3,772,365

DERIVATIVES OF GERANYL PHENYL ETHERS

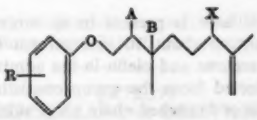
Ferenc M. Pallos, Walnut Creek, and Chien K. Tseng, El Cerrito, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Nov. 4, 1971, Ser. No. 198,018

Int. Cl. C07d *1/18*

U.S. Cl. 260—348 R **6 Claims**

Compounds having the formula



in which R is hydrogen, lower alkyl, lower alkenyl, lower alkoxy, halogen, nitro; or lower alkylthio; X is chlorine or bromine; A and B are each hydrogen, together form an epoxide link or together form a bond; the use of these compounds in controlling insects; and a method of preparing these compounds.

3,772,366

PROCESS FOR THE PREPARATION OF 9β,10β STEROIDS

Milan Radoje Uskokovic, Montclair, and Thomas Henry Williams, Cedar Grove, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Oct. 20, 1965, Ser. No. 499,094, now Patent No. 3,574,761, which is a continuation-in-part of application Ser. No. 400,206, Sept. 29, 1964, now Patent No. 3,412,107. Divided and this application Oct. 14, 1970, Ser. No. 80,789

Int. Cl. C07c *171/00*

U.S. Cl. 260—343.5 **6 Claims**

The present invention is directed to a process for the complete chemical synthesis of steroids having the 9β, 10α-configuration from the natural steroids possessing the 9α,10β-configuration including intermediates in this synthesis. The steroids with the 9β,10α-configuration are useful as anabolic agents, anti-androgenic agents, progestational agents and as salt-retaining agents.

3,772,367

PROCESS FOR THE PRODUCTION OF METHYL KETONES

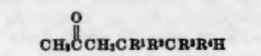
Nazar S. Aprahamian, West Nyack, N.Y.; Aida O. Aprahamian, executrix of the estate of said Nazar S. Aprahamian, deceased, assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed June 13, 1972, Ser. No. 262,310

Int. Cl. C07c *49/06, 49/76*

U.S. Cl. 260—590 16 Claims

A vapor phase process for the production of methyl ketones having the following structural formula:



wherein R^1, R^2, R^3, and R^4 are hydrogen, a straight or branched chain alkyl radical having 1 to 8 carbon atoms wherein the total number of carbon atoms in all of said alkyl radicals is no greater than 12 carbon atoms, a phenyl radical, or a phenyl radical wherein one to three hydrogen atoms are substituted by a straight chain alkyl radical having 1 to 3 carbon atoms, and wherein there are no more than 2 phenyl radicals,

comprising admixing acetone with an olefin having the following structural formula:

$$R^1R^2C{=}CR^3R^4$$

wherein R^1, R^2, R^3, and R^4 are as defined above at a temperature in the range of about 300° C. to about 650° C. wherein the molar ratio of acetone to olefin is in the range of about 0.1 mol to about 10 mols of acetone per mole of olefin, and

wherein the initiator is present in an amount of about 0.5 mol percent to about 30 mol percent based on the total mols of acetone and olefin in the admixture and the initiator is selected from the group consisting of unsubstituted straight or branched chain alkyl aldehydes having two to seven carbon atoms and unsubstituted straight or branched chain alkyl formates wherein the alkyl radical has 1 to 10 carbon atoms.

3,772,368

CHEMICAL SYNTHESIS

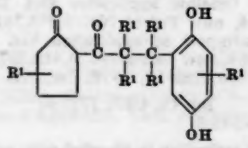
Henry Bader, Newton Center, and Avinash C. Mehta, Belmont, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed July 19, 1971, Ser. No. 163,998

Int. Cl. C07c *49/82*

U.S. Cl. 260—590 11 Claims

A process for preparing a silver halide developer of the following formula:



(Formula 1)

wherein R^1 represents a substituent which can be the same or different but which does not impair the functionality of the compound as a silver halide developer. Specific substituents include hydrogen, alkyl radicals and alkoxy radicals among others. Essentially the process involves the acylation of Schiff base anions with lactones to directly provide an intermediate which can be readily converted to the dye developer of Formula 1.

3,772,369

PURIFICATION OF HEXAMETHYLENEDIAMINE

Kenji Nishimura, Kanenobu Matsui, and Koichi Hirai, Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan

No Drawing. Filed Nov. 24, 1971, Ser. No. 201,996

Claims priority, application Japan, Dec. 11, 1970, 45/109,342

Int. Cl. C07c *87/14*

U.S. Cl. 260—583 N 6 Claims

A crude hexamethylenediamine is purified by treating the crude hexamethylenediamine with periodic acid or its salts and thereafter, distilling the treated crude hexamethylenediamine, whereby 1,2-diaminocyclohexane is removed from the crude hexamethylenediamine.

3,772,370

N,N'-BIS[4(4'-(NITRO OR AMINO)-PHENOXY) BENZYL]-N,N'-BRIDGED-DIAMINES

Alexander R. Surrey, Albany, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 652,013, July 10, 1967. This application Apr. 17, 1970, Ser. No. 29,643

Int. Cl. C07c *87/28*

U.S. Cl. 260—570.5 P 10 Claims

Alkylenediamine derivatives substituted on each nitrogen atom by 4-(4'-nitrophenoxy)benzyl or 4-(4'-aminophenoxy)benzyl, optionally substituted additionally on each nitrogen by lower-alkyl, phenylcarbamoyl or dihaloacetyl and optionally interrupted in alkylene by cycloalkylene, phenylene, alkylated-phenylene, pyridylene, furylene and thiazolylene. The compounds, which have antibacterial activity, are prepared stepwise by reacting an alkylenediamine with two molar equivalents of 4-(4'-nitrophenoxy)benzaldehyde and reducing the resulting bis-(benzal)alkanediamines.

3,772,371

BENZODIAZEPINE DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Ryuji Tachikawa, Hiromu Takagi, Toshiharu Kamioka, Tetsuo Miyadera, Mitsunobu Fukunaga, and Yoichi Kawano, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

No Drawing. Original application Nov. 14, 1968, Ser. No. 775,914. Divided and this application May 25, 1970, Ser. No. 48,695

Claims priority, application Japan, Nov. 27, 1967, 42/76,005

Int. Cl. C07c *103/42*

U.S. Cl. 260—562 N 1 Claim

Novel 5-phenyl (or substituted phenyl)-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine-2-one derivatives. These novel compounds are characterized by their psychosedative properties, especially they show tranquilizing and antidepressant properties and, thus, they are useful as a minor transquilizer. Such benzodiazepine base is prepared by reaction of corresponding 2-substituted acylaminobenzophenone derivative with appropriate primary amine derivative.

3,772,372
N-ARYL UREAS

Erich Klauke, Odenthal-Hahnenberg, Engelbert Kuhle, Bergisch Gladbach, Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 3, 1969, Ser. No. 830,121
Claims priority, application Germany, June 10, 1968, P 17 68 634.9
Int. Cl. C07c *127/00*
U.S. Cl. 260—553 A 10 Claims

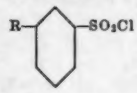
N-aryl ureas, i.e. N-[(3- or 4-difluoromethyl and optionally 4- or 3-chloro)-phenyl]-N'-(optionally alkyl)-N'-(alkyl or alkenyl)-ureas which possess herbicidal properties, and which may be produced by conventional methods.

3,772,373
PREPARATION OF HIGH MOLECULAR WEIGHT ALKYLBENZENE SULFONYL CHLORIDES

Richard J. Lee, Park Forest, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Oct. 30, 1969, Ser. No. 872,736
Int. Cl. C07c *143/70*
U.S. Cl. 260—543 R 3 Claims

Alkylbenzene sulfonyl chloride:



wherein R is an alkyl group, can be prepared by a chlorosulfonation of alkylbenzene hydrocarbons without formation of sulfuric acid and without chlorination of alkylbenzene sulfonic acid. Said method is carried out by reacting alkylbenzene with 1.0:1.0 molar mixture of chlorosulfonic acid ($ClSO_3H$) and sulfurylchloride (SO_2Cl_2).

3,772,374
PROCESS FOR PREPARING ALKALI METAL NITRILOTRIACETATES

Chung Yu Shen, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of abandoned application Ser. No. 624,376, Mar. 20, 1967. This application Aug. 9, 1971, Ser. No. 170,386
Int. Cl. C07c *101/26*
U.S. Cl. 260—534 E 7 Claims

A process is described for preparing alkali metal nitrilotriacetate by hydrolyzing nitrilotriacetonitrile dissolved in an aqueous solution containing an alkali metal hydroxide at a temperature of from about 90° C. to about 150° C. with the alkali metal hydroxide being in an excess amount sufficient to rapidly convert said nitrile to alkali metal nitrilotriacetate and form an aqueous alkali metal hydroxide solution containing alkali metal nitrilotriacetate crystals, and recovering the alkali metal nitrilotriacetate crystals from the solution.

3,772,375
PROCESS FOR PRODUCING ε-HYDROXYCAPROIC ACID

Jean-Claude Brunie, Michel Costantini, and Noel Crenne, Lyon, and Michel Jouffret, Villeurbanne, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Oct. 8, 1969, Ser. No. 864,885
Claims priority, application France, Oct. 11, 1968, 169,139
Int. Cl. C07c *51/16, 51/24, 59/04*
U.S. Cl. 260—533 C 7 Claims

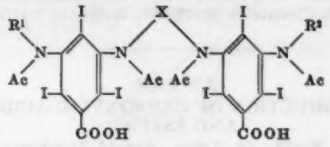
ε-Hydroxycaproic acid is made by hydrogenation of 6-hydroperoxyhexanoic acid itself preferably isolated from an aqueous wash of the product of oxidising cyclohexane with molecular oxygen in the liquid phase without a metal catalyst.

3,772,376
X-RAY CONTRAST AGENTS

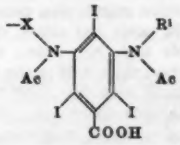
Torsten Karl Ivar Bernhard Ekstrand, Norrkoping, Sweden, Asger Munksgaard, Soborg, Denmark, and Alvin Ronlan and Borje Vilhelm Wickberg, Lund, Sweden, assignors to Erco Lakemedel AB, Stockholm, Sweden

No Drawing. Filed Mar. 12, 1971, Ser. No. 123,904
Claims priority, application Sweden, Mar. 12, 1970, 3,267/70, 3,268/70; Mar. 31, 1970, 4,323/70
Int. Cl. C07c *103/32*
U.S. Cl. 260—518 A 1 Claim

The invention provides X-ray contrast agents and compositions containing them. The new agents of the invention are compounds of the formula:



or a salt thereof with a physiologically acceptable organic or inorganic base, wherein R^1 is a hydrogen atom or an alkyl group containing up to three carbon atoms which may be substituted by one or two hydroxy groups; R^2 is a hydrogen atom, an alkyl group containing up to three carbon atoms which may be substituted by one or two hydroxy groups, or a group of the formula:



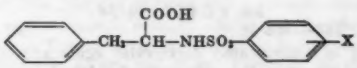
Ac is an acetyl or propionyl group; and X is an alkylene group containing from 3 to 6 carbon atoms.

3,772,377
PHENYLALANINE DERIVATIVES

Ronald F. Borne, Oxford, Miss., assignor to The University of Mississippi, University, Miss.

No Drawing. Filed Sept. 19, 1972, Ser. No. 290,404
Int. Cl. C07c *143/80*
U.S. Cl. 260—518 A 5 Claims

Compounds having the formula:



wherein X is F, Cl, or Br and the non-toxic, pharmaceutically-acceptable inorganic and organic salts thereof. Antiinflammatory compositions consisting essentially of at least one of said compounds in admixture with a non-toxic, pharmaceutically-acceptable carrier. A method for reducing inflammation of the tissues in mammals comprising administering a therapeutically effective concentration of at least one of said compounds, preferably in admixture with a non-toxic pharmaceutically-acceptable carrier.

3,772,378
7-OXO-BENZOCYCLOHEPTENE ACETIC ACIDS

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Dec. 1, 1971, Ser. No. 203,900
Int. Cl. C07c *65/20*
U.S. Cl. 260—515 P 5 Claims

Benzocycloheptene acetic acids, e.g. 7-oxo-7H-benzocycloheptene-6,8-diacetic acid, are prepared by reacting a phthalaldehyde with a keto-carboxylic acid. The resulting products are useful as anti-diabetic agents.

3,772,379

PREPARATION OF DIALKALI DIHYDROXYBENZENE DISULFONATES

Paul E. Woodgate, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 28, 1971, Ser. No. 193,562

Int. Cl. C07c *143/44, 143/46*

U.S. Cl. 260—512 R 5 Claims

A process for the preparation of dialkali dihydroxybenzene disulfonates which consists in dissolving an appropriate dihydroxybenzene in concentrated sulfuric acid. To this mixture fuming sulfuric acid is added and then to this mixture is added an amount of an alkali metal base sufficient to cause crystals of the dialkali dihydroxybenzene disulfonate to precipitate from the mixture.

3,772,380

PRODUCTION OF CARBOXYLIC ACIDS AND ESTERS

Frank E. Paulik, St. Louis, Arnold Hershman, Creve Coeur, James F. Roth, Maryland Heights, and Walter R. Knox, Town and Country, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of abandoned application Ser. No. 628,578, Apr. 5, 1967. This application Mar. 12, 1970, Ser. No. 2,376

Int. Cl. C07c *51/12, 67/00*

U.S. Cl. 260—488 K 20 Claims

The present invention relates to a process for the preparation of carboxylic acids and esters, specifically by the reaction of alcohols and their ester, ether and halide derivatives with carbon monoxide in the presence of catalyst systems containing as active constituents an iridium component and a halogen component. The process is also directed to the production of mixtures of organic acids and/or organic esters.

3,772,381

PROCESS FOR PRODUCTION OF ESTERS OF UNSATURATED CARBOXYLIC ACIDS

Seishiro Nakamura and Teruo Yasui, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

No Drawing. Filed June 18, 1970, Ser. No. 47,619

Claims priority, application Japan, June 20, 1969, 44/49,241

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R 13 Claims

Esters of unsaturated carboxylic acids are obtained from the corresponding unsaturated aldehydes in a single step by reacting said aldehydes with alcohols and molecular oxygen in the presence of at least a catalytic amount of palladium.

3,772,382

ALKYL-SULFOXIDE TERMINATED OLIGOMERS

Leland E. Dannals, Waterbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Application Nov. 19, 1968, Ser. No. 777,175, now Patent No. 3,668,230, which is a continuation-in-part of application Ser. No. 562,098, July 1, 1966, now Patent No. 3,498,942, which is a continuation-in-part of application Ser. No. 562,097, July 1, 1966, now Patent No. 3,498,943, which in turn is a continuation-in-part of abandoned application Ser. No. 547,743, May 5, 1966. Divided and this application Aug. 25, 1971, Ser. No. 174,940

Int. Cl. C07c *147/02, 147/14*

U.S. Cl. 260—481 R 7 Claims

Alkyl-sulfoxide and alkyl-sulfone terminated oligomers, prepared by addition polymerization of monomer in presence of a mercaptan, followed by oxidation. Oligomers used as emulsifiers in the emulsion polymerization of one or more monomers to produce rubber or plastic latexes from which solid polymers can be obtained.

3,772,383

PROCESS FOR PREPARING PHENYL ESTERS OF ALIPHATIC CARBOXYLIC ACIDS

Naoya Kominami, Tokyo, and Nobuhiro Tamura, Saitama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Aug. 6, 1971, Ser. No. 169,835

Claims priority, application Japan, Aug. 6, 1970, 45/68,344; July 16, 1971, 46/49,215

Int. Cl. C07c *69/02, 69/14, 69/22*

U.S. Cl. 260—479 R 17 Claims

Phenyl esters of aliphatic carboxylic acids which are useful as the material for preparing phenols or other derivatives, are prepared in one step and in remarkably high yield from benzene or lower alkly derivatives thereof, by reacting them with lower aliphatic carboxylic acids and a molecular oxygen-containing gas in liquid phase at an elevated temperature in the presence of nitric acid, using a catalyst of (i) palladium or its compounds, (ii) at least one of the compounds of copper, zinc, cadmium, uranium, tin, lead, vanadium, antimony, bismuth, chromium, tellurium, manganese, iron, cobalt, nickel or thallium, and (iii) an alkali salt of fatty acid.

3,772,384

CARBONYLATION OF ALIPHATIC ORGANIC HALIDES WITH METALLIC ALCOHOLATES

Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 788,944, Jan. 3, 1969, now Patent No. 3,636,082. This application Aug. 25, 1971, Ser. No. 174,996

Int. Cl. C07c *69/02, 69/52, 69/76*

U.S. Cl. 260—476 R 8 Claims

Organic esters are prepared by reacting an organic halide, an alkali or alkaline earth alcoholate and carbon monoxide at elevated temperature and pressure, in the presence of a palladium catalyst and carbon dioxide.

3,772,385

CARBAMATES CONTAINING AN OXIME ETHER FUNCTION

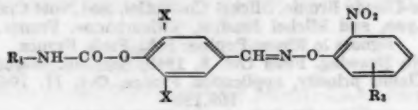
Adolf Hubele, Riehen, near Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 786,762, Dec. 24, 1968. This application Nov. 4, 1971, Ser. No. 195,822

Int. Cl. C07c *131/12*

U.S. Cl. 260—472 13 Claims

The invention relates to new oxime ethers of the formula

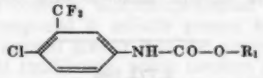


wherein R_1, R_2, R_3 and X have the meanings given below

Said oxime ethers are used in herbicidal preparations for controlling undesired plant growth in cultures of cereals, maize, rice and soya. Some of these ethers can also be used for combatting pests of the order acerinae.

3,772,386
N-[3-TRIFLUOROMETHYL-4-CHLOROPHENYL]-CARBAMATES
Adolf Hubele, Riehen, and Otto Rohr, Therwil, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Original application Feb. 4, 1969, Ser. No. 796,571, now Patent No. 3,676,457. Divided and this application May 30, 1972, Ser. No. 258,119
Claims priority, application Switzerland, Feb. 6, 1968, 1,765/68
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **3 Claims**

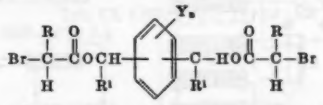
The invention relates to compounds of the general formula



wherein R_1 represents an aralkyl or aralkenyl residue or a phenyl radical having 4 or 5 substituents or a 5- to 6-membered heterocycle which may be bound over an alkyl residue. The compounds are used for combating various types of pests, preferably bacteria and fungi.

3,772,387
α,α′-BIS(BROMOCYANOACETOXY)-XYLENES
Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Original application Aug. 28, 1969, Ser. No. 853,973, now Patent No. 3,681,439. Divided and this application May 15, 1972, Ser. No. 253,220
Int. Cl. C07c *121/66*
U.S. Cl. 260—465 D **2 Claims**

Compounds having the formula



in which R is hydrogen or cyano and R^1 is hydrogen or methyl, Y is H, lower alkyl or halo, *n* is a whole integer of from 1 to 4, and the use of these compounds as biocides such as in controlling fungi and bacteria.

3,772,388
PROCESS FOR ELIMINATING INSOLUBLE RESIDUES FORMED DURING THE PRODUCTION OF ADIPONITRILE BY DIMERIZATION
Henri Lefebvre, Cite de la Taille 48, B–5790, Jemeppe-sur-Sambre, Belgium, and Jacques Van Bost, Rue la Haie le Comte 19, B–5001, Belgrade, Belgium
No Drawing. Filed May 24, 1971, Ser. No. 146,430
Claims priority, application France, May 27, 1970, 7019480
Int. Cl. C07c *121/02, 121/26*
U.S. Cl. 260—465.8 A **5 Claims**

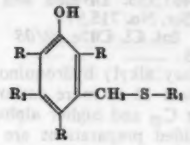
The insoluble deposition formed during the production of adiponitrile by the dimerization of a β-halogenopropionitrile and/or acrylonitrile are eliminated by treatment with an aqueous solution of hydrogen peroxide.

3,772,389
PROCESS FOR THE SYNTHESIS OF PHENYL ESTERS
William W. Lowrance, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed June 24, 1971, Ser. No. 156,544
Int. Cl. C07c *69/24, 69/78, 121/60*
U.S. Cl. 260—465 D **13 Claims**

A process for the synthesis of phenyl esters directly from the corresponding phenols and carboxylic acids which comprises contacting a phenolic compound having at least one hydrogen atom adjacent the active hydroxyl group with a carboxylic acid compound containing at least one active carboxylic group in the presence of a catalytic amount of a borate-sulfuric acid catalyst complex. The process is carried out in a single stage reactor which may be operated at from 75° C. to 285° C. under atmospheric, subatmospheric or superatmospheric pressure. If desirable, a solvent can be employed.

3,772,390
HINDERED PHENOL SULFIDES
John Song, Bound Brook, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Application June 4, 1970, Ser. No. 43,594, now Patent No. 3,660,352, which is a continuation-in-part of abandoned application Ser. No. 705,624, Feb. 15, 1968. Divided and this application Oct. 13, 1971, Ser. No. 189,008
Int. Cl. C07c *149/36*
U.S. Cl. 260—609 F **5 Claims**

Compounds of the type represented by the formula:



wherein each R is independently a lower alkyl group, R_1 higher alkyl or higher alkylbenzyl, R_2 is hydrogen or the group $—CH_2SR_1$, and their use as effective antioxidants for organic materials normally subject to oxidative deterioration, especially polyolefins.

3,772,391
METHOD OF PRODUCTION OF HYDROXYARYL THIOETHERS FROM SULFONIUM COMPOUNDS
Kurt H. Pilgram, Modesto, Calif., Dirk Medema, Amsterdam, Netherlands, and Samuel B. Soloway and George W. Gaertner, Jr., Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Original application Sept. 14, 1970, Ser. No. 72,163, now Patent No. 3,732,317. Divided and this application Feb. 8, 1973, Ser. No. 330,546
Int. Cl. C07c *149/46*
U.S. Cl. 260—609 F **3 Claims**

Hydroxyaryl thioethers are prepared by first preparing a phenyl sulfonium bisulfate—either directly by reacting a phenol with dimethyl sulfoxide in sulfuric acid or stepwise by reacting an organic sulfide with chlorine in sulfuric acid to form a chloro-sulfonium bisulfate and reacting this crude reaction mixture with a phenol—then reacting the crude reaction mixture containing the phenyl sulfonium bisulfate with water containing halide ions to effect formation of the thioether. Nitration of the intermediate phenyl sulfonium bisulfate thus prepared can be effected using nitric acid and optionally additional sulfuric acid without the isolating of any intermediate products. Novel intermediates are also prepared via this method.

3,772,392
PROCESS FOR PREPARING PARAFORMALDEHYDE
Teo Paleologo and Jacob Ackermann, Milan, Italy, assignors to Societá Italiana Resine S.I.R. S.p.A., Milan, Italy
No Drawing. Continuation of abandoned application Ser. No. 743,318, July 9, 1968. This application Aug. 24, 1972, Ser. No. 283,445
Int. Cl. C07c *47/10*
U.S. Cl. 260—615.5 **9 Claims**

A process for the preparation of paraformaldehyde is provided in which solid particulate paraformaldehyde is prepared and then cured in the presence of a regulator selected from:

(i) basic organic compounds of a pK_b between 6 and 12

(ii) high-temperature condensation products of formaldehyde and highly basic amines of pK_b between 2 and 6

(iii) middle-basic organic compounds, being heterocyclic compounds formed by one, two or three hexatomic condensed and hydrogenated rings in which the heteroatom or atoms is or are nitrogen.

3,772,393

DI(HIGHER SECONDARY ALKYL) HYDROQUINONES

Byron A. Hunter, Woodbridge, Conn., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Application July 20, 1967, Ser. No. 654,713, now Patent No. 3,424,821, which is a continuation-in-part of application Ser. No. 506,860, Nov. 8, 1965, now Patent No. 3,467,735. Divided and this application Mar. 26, 1968, Ser. No. 715,970

Int. Cl. C07c *39/08*

U.S. Cl. 260—625 2 Claims

New di(secondary alkyl) hydroquinones in which the alkyl groups contain 12 or more carbon atoms are prepared by reacting C_{12} and higher alpha-olefins with hydroquinone. Modified preparations are made using styrene, alpha-methyl styrene or terpenes in addition to alpha-olefin. The products are useful as antioxidants, especially for polymers (rubbers or plastics) or vegetable oils.

3,772,394

SEPARATION OF CHLOROPHENOLS

Malcolm Howard Milnes, Chesterfield, England, assignor to Coalite and Chemical Products Limited, Chesterfield, England

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,031

Claims priority, application Great Britain, Dec. 12, 1969, 60,806/69

Int. Cl. C07c *39/30*

U.S. Cl. 260—623 R 15 Claims

A mixture of polychlorophenols, particularly a mixture of two or more dichlorophenols, is separated at least in part by contact with an alkaline solution under conditions such that at least one of the polychlorophenols passes into the alkaline solution more readily than the other polychlorophenol or polychlorophenols. Furthermore, a mixture of dichlorophenols, particularly a mixture of the 2,3- and 2,6-isomers or a mixture of 2,5- 2,4- and 3,4-isomers, is selectively extracted with an aqueous alkaline solution. The alkaline solution may be an aqueous solution of a caustic alkali, for example, sodium hydroxide. Alternatively, the extractive solvent may be an aqueous solution of a mild alkali, for example, a carbonate, phosphate, acetate, silicate, borate or other suitable salt of a metal of Group I or II, for example sodium carbonate or trisodium phosphate. The extraction or separation is preferably but not essentially effected with the chlorophenols in solution in an inert solvent, for example a hydrocarbon or hydrocarbon fraction such as benzene, toluene or petroleum ether, or butyl acetate. The extraction is preferably carried out by contacting the alkaline solution countercurrently with the phase comprising the chlorophenols.

The chlorophenols may be recovered from the aqueous extract phase by acidification, for example, with hydrochloric acid or sulphuric acid, to liberate the chlorophenol with subsequent filtration to separate the liberated chlorophenol. Alternatively, the chlorophenol may be removed from the aqueous extract phase by a further solvent extraction. Thus, for example, 2,6-dichlorophenol contained in aqueous sodium carbonate as an extract from a solution of a mixture of 2,3- and 2,6-dichlorophenols in toluene, has been separated from the aqueous phase by countercurrent extraction with methyl isobutyl ketone in one instance and by butyl acetate in another instance.

3,772,395

PROCESS FOR INCREASING SELECTIVITY OF TETRAMETHYLENE GLYCOL

Mitsuo Yamaguchi and Yoichi Kageyama, Tokyo, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Aug. 26, 1971, Ser. No. 175,359

Claims priority, application Japan, Aug. 6, 1970, 45/77,667

Int. Cl. C07c *31/18*

U.S. Cl. 260—635 D 5 Claims

The selectivity of tetramethylene glycol, by the hydrogenation of γ-butyrolactone, is increased by using a catalytically active metallic nickel-metallic cobalt-oxide of thorium.

3,772,396

PROCESS FOR DEPOLYMERIZING DICYLOPENTADIENE

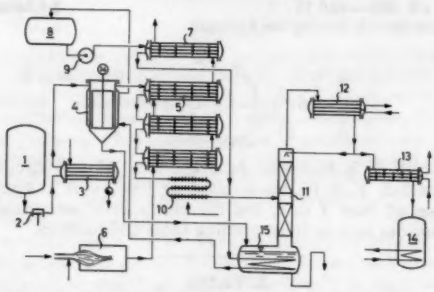
Heinz Boesenberg, Hofheim, Taunus, Heinz Frensch, Frankfurt am Main, and Harald Lorenz, Fischbach, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Jan. 17, 1972, Ser. No. 218,230

Claims priority, application Germany, Jan. 19, 1971, P 21 02 262.8

Int. Cl. C07c *3/26*

U.S. Cl. 260—666 A 1 Claim



Dicyclopentadiene is thermally split to yield cyclopentadiene by first evaporating dicyclopentadiene in a film evaporator, carrying the vapor to a tube-type heat exchanger, cracking the vapor and rectifying the cyclopentadiene. Cracking is carried out at 270–400° C., the vapor being passed through the heat exchanger at a velocity such to yield a residence time of 6–12 seconds in a turbulent flow. Cyclopentadiene of about 99.9% purity is obtained, and the conversion rate is over 90%.

3,772,397

HYDROCARBON ISOMERIZATION PROCESS

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Application Apr. 25, 1969, Ser. No. 819,456, now Patent No. 3,632,525, which is a continuation-in-part of application Ser. No. 807,910, Mar. 14, 1969. Divided and this application July 30, 1971, Ser. No. 167,796

Int. Cl. C07c *5/24*

U.S. Cl. 260—668 A 15 Claims

Isomerizable hydrocarbons are isomerized using a catalytic composite comprising a combination of a platinum group component and a tin component with a porous carrier material.

3,772,398
PROCESS FOR PREPARING A MONOALKYL AROMATIC

Norman L. Carr, Allison Park, and Daniel Y. C. Ko, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

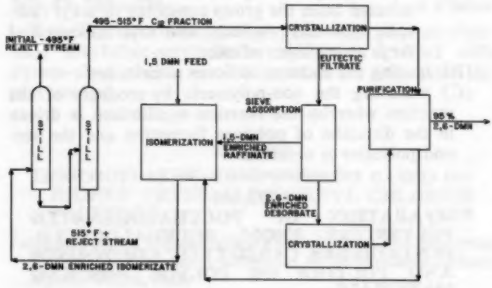
Filed Aug. 13, 1971, Ser. No. 171,540
Int. Cl. C07c *3/52*
U.S. Cl. 260—671 P 12 Claims

An improvement in a process wherein a first compound is converted to a second compound in an essentially irreversible reaction or to the second compound and to a third compound in essentially irreversible reactions, the second compound and the third compound are convertible to each other in equilibrium-limited reactions and the third compound is initially present in the reaction zone in an amount greater than the amount that would be present at equilibrium, which involves introducing an additional amount of the third compound in the reaction zone and terminating the process when the reaction mixture contains the third compound in an amount greater than the amount initially present.

3,772,399
SEPARATION OF 2,6-DIMETHYLNAPHTHALENE FROM 1,5 - DIMETHYLNAPHTHALENE WITH MOLECULAR SIEVE

John A. Hedge, Wilmington, Del., assignor to Sun Research and Development Co., Marcus Hook, Pa., and Teijin Limited, Tokyo, Japan

Continuation-in-part of applications Ser. No. 7,273, Jan. 30, 1970, now Patent No. 3,668,267, and Ser. No. 207,870, Dec. 14, 1971. This application May 25, 1972, Ser. No. 256,863
Int. Cl. C07c *7/12, 15/24*
U.S. Cl. 260—674 SA 13 Claims



Selective adsorption of 2,6-dimethylnaphthalene from a eutectic mixture with 1,5-dimethylnaphthalene can be obtained with partially dehydrated molecular sieves (crystalline alumino-silicate zeolite). Preferably the Al/Si ratio in the zeolite framework is in the range of 0.2–0.65, more preferred 0.2–0.35 (e.g., type L). The unadsorbed raffinate fraction can be fed to an isomerization step.

3,772,400
HYDROISOMERIZATION PROCESS AND CATALYST THEREFOR

James W. Garner and Marvin M. Johnson, Bartlesville, Okla., assignors to Phillips Petroleum Company

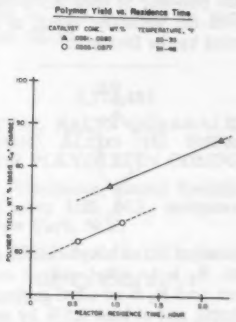
No Drawing. Filed Jan. 7, 1972, Ser. No. 216,262
Int. Cl. C07c *5/22*
U.S. Cl. 260—683.2 11 Claims

The hydroisomerization of olefin containing streams is improved by contacting the feed with a Group VIII metal supported catalyst which has been treated with ammonia. The improved catalyst is much more selective in that it inhibits the polymerization of branched olefins when present in the feed stream. In a further improvement, the selectivity of the treated catalyst is maintained by adding to the feed stream small amounts of a nitrogen containing compound.

3,772,401
CONTINUOUS 2-METHYL-1-ALKENE POLYMERIZATION PROCESS

William D. Stepanek, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 836,941, June 26, 1969. This application Oct. 27, 1971, Ser. No. 192,930
Int. Cl. C07c *3/18*
U.S. Cl. 260—683.15 B 10 Claims



A lower 2-methyl-1-alkene continuous polymerization process which produces a polymer having a molecular weight within the range of from 750 to 2500 by contacting a 2-methyl-1-alkene or mixtures thereof with an aluminum bromide, hydrogen bromide catalyst at a temperature of from about 15° F. to about 75° F. under an olefin liquefying pressure at a high olefin to catalyst mole ratio for a residence time of about 1½ hours to 2½ hours and recovering a polymer of a lower 2-methyl-1-alkene.

3,772,402
CURING ABC TERPOLYMERS

Ollie G. Buck and Henry L. Hsieh, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 11,919, Feb. 16, 1970. This application Nov. 29, 1971, Ser. No. 203,065
Int. Cl. C08g *30/12, 33/00*
U.S. Cl. 260—830 R 4 Claims

ABC terpolymers having hydroxyl and/or carboxyl groups therein are cured with polyfunctional compounds capable of reacting with hydroxyl and/or carboxyl functional groups.

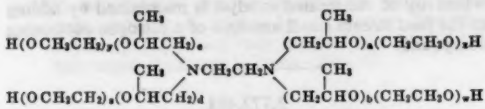
3,772,403
PROCESS FOR PRODUCING AN IMPROVED ANTISTATIC POLYAMIDE FIBER

Rodney Lee Wells, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 30, 1972, Ser. No. 257,853
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 PG 10 Claims

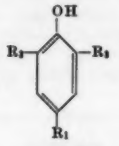
It has been suggested that the utility of synthetic fibers of polyamide could be increased by dispersing in the poly-

amide about 1 to 12 percent by weight of an antistatic compound represented by the formula:

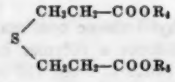


where *a*, *b*, *c*, *d*, *w*, *x*, *y* and *z* are each a whole number and the total of *a*, *b*, *c* and *d* is between 8 and 850 and the total of *w*, *x*, *y*, and *z* is between 8 and 1,000.

However, with incorporation of this antistatic additive in the polyamide, serious problems have been encountered in melt-spinning due to the frequent occurrence of "nubs" or enlarged places in the extruded polyamide filament. It has now been found that the occurrence of said nubs in the antistatic polyamide fiber can be greatly reduced by dispersing in the polymer at least 0.5% by weight, based on the weight of the antistatic agent, of a phenol compound represented by the formula:



where R_1 is hydrogen or an alkyl radical containing 1 to 5 carbon atoms, R_2 is an alkyl radical containing 12 to 18 carbon atoms, and R_3 is an alkyl radical containing 12 to 18 carbon atoms; and at least 0.5% by weight, based on the weight of the antistatic additive, of a sulfur compound of the formula:



where R_4 is an alkyl radical containing 8 to 18 carbon atoms and R_5 is an alkyl radical containing 8 to 18 carbon atoms.

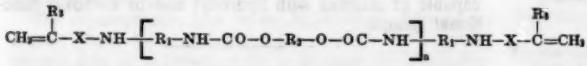
3,772,404

RESINS

Michael Horace Knight, Barbara Mitchell, and Maurice James Ratcliffe, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,103
Claims priority, application Great Britain, Jan. 8, 1971, 1,061/71
Int. Cl. C08f *29/20*
U.S. Cl. 260—859 R **13 Claims**

A polymerisable mixture, and resins derived by copolymerisation of the mixture, comprising from 5% to 95% by weight of at least one prepolymer having the structure:



in which R_1 and R_2 are each organic groups at least one of which contains at least one cyclic group in the macromolecular chain of the prepolymer and are such that in said structure there are not more than 30 atoms, and preferably not more than 20 atoms, in the chain between adjacent cyclic groups, *n* is a whole number of from 1 to 20, and preferably 1 to 10, and when *n* is one and only R_2 contains at least one cyclic group in the chain there are not more than 30 atoms, and preferably not more than 20 atoms, in the chain between the cyclic group in R_2 and the nitrogen atom attached to the group X, R_3 is hydrogen or a hydrocarbyl group and X is a divalent group, and from 95% to 5% by weight of at least one vinyl monomer substantially free of isocyanate-reactive groups and copolymerisable with said prepolymer.

3,772,405

PROCESS FOR PREPARING AROMATIC DIESTER CONTAINING COPOLYESTERS AND PRODUCTS OBTAINED THEREBY

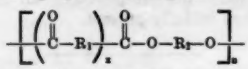
Frederick L. Hamb, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 2, 1972, Ser. No. 222,977
Int. Cl. C08g *39/10*
U.S. Cl. 260—860 **20 Claims**

A second polyester is prepared from a first polyester by a process comprising:

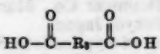
(A) mixing:

(1) a first polyester having the structure:



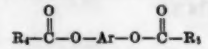
wherein R_1 is an aliphatic radical, an alicyclic radical or an aromatic radical, R_2 is an aliphatic radical or an alicyclic radical, *x* is 0 or 1 and *n* is a positive integer,

(2) a dicarboxylic acid having the structure:



wherein R_3 is an aliphatic radical, an alicyclic radical or an aromatic radical, and

(3) an aromatic diester having the structure:



wherein R_4 and R_5 are radicals independently selected from the group consisting of alkyl radicals, cycloalkyl radicals, and aryl radicals and Ar is an arylene radical;

(B) heating the mixture to form a melt; and

(C) removing the non-polymeric by-products of the reaction whereby the reaction equilibrium is driven in the direction of polymer formation and the second polyester is obtained.

3,772,406

PREPARATION OF POLYHALOGENATED POLYESTERS FROM POLYHALOCYCLOPENTADIENES, CARBOXYLIC COMPOUNDS AND POLYOLS OR POLYOL FORMING MATERIALS

Brian M. Rushton, Williamsville, Jerold C. Rosenfeld, Tonawanda, and Raymond R. Hindersinn, Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Aug. 17, 1971, Ser. No. 172,595
Int. Cl. C08f *21/02*; C08g *17/10*
U.S. Cl. 260—869 **24 Claims**

An improved process for the preparation of unsaturated polyesters is provided. The process comprises the steps of forming a 1:1 adduct of a polyhalogenated cyclopentadiene and maleic anhydride by heating a mixture of these components, in which the latter is present in excess, in an atmosphere of an oxygen containing gas, then after replacing the oxygen containing gas atmosphere with one of an inert gas, heating the adduct containing excess maleic anhydride with a polyol or a polyol forming material, such as an alkylene oxide, to form an unsaturated polyester composition which is co-polymerizable with

ethylenic monomers, such as styrene. The resultant copolymers are infusible, insoluble, light colored resins and are useful as fire retardant resins.

3,772,407

GLYOXAL SUBSTITUTED VINYL ALCOHOL-ACRYLAMIDE GRAFT POLYMERS

Laurence Lyman Williams, Stamford, and Anthony Thomas Coscia, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of applications Ser. No. 745,486, July 17, 1968, now Patent No. 3,556,932, Ser. No. 761,798, Sept. 23, 1968, now Patent No. 3,597,313, and abandoned application Ser. No. 471,463, July 12, 1965. This application Jan. 18, 1971, Ser. No. 107,459

Int. Cl. C08f *15/10*

U.S. Cl. 260—875 **3 Claims**

Water-soluble ionic vinyl alcohol polymers consisting essentially of (a) a vinyl alcohol acrylamide grafted linkages and (b) such linkages carrying a substantial number of glyoxal substituents to render the polymer thermosetting are wet strength agents for paper. Paper containing the polymer in thermoset and cellulose-reacted state loses about half of its wet strength on 24 hours of normal wet weathering, thereby alleviating the litter problem.

3,772,408

POLYMER BLEND RESIN COMPOSITIONS

Robert L. Lauchlan, Granger, Ind., and Hugh E. Snodgrass, Arcadia, Calif., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Mar. 15, 1972, Ser. No. 235,073

Int. Cl. C08f *29/22, 37/18, 41/12*

U.S. Cl. 260—876 **6 Claims**

Blends of chlorinated polyethylene with alkyl acrylate-vinyl alkylether-acrylonitrile copolymers grafted with styrene-acrylonitrile are characterized by improved impact strength.

3,772,409

THERMOPLASTIC COMPOSITIONS BASED ON HIGHLY CRYSTALLINE VINYL CHLORIDE POLYMERS

Luciano Scarso, Milan, Egidio Cerri, Mestre, and Giovanni Pezzin, Padova, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Continuation-in-part of abandoned application Ser. No. 826,695, May 21, 1969. This application Sept. 2, 1971, Ser. No. 177,449

Claims priority, application Italy, May 22, 1968, 16,792/68

Int. Cl. C08f *29/24*

U.S. Cl. 260—876 R **6 Claims**

Thermoplastic compositions based on highly crystalline vinyl chloride polymers and characterized by high heat-resistance, easy processability, and increased or reinforced impact strength are disclosed.

The new compositions comprise (A) highly crystalline vinyl chloride polymers which exhibit syndiotactic steric structure (SPVC); (B) copolymers of methyl-methacrylate and alpha-methylstyrene (MMA-αMS); and (C) an elastomeric polymeric material which may be a graft copolymer of styrene-methylmethacrylate onto a polybutadiene rubber (MBS), a graft copolymer of vinyl chloride onto an elastomeric ethylene/propylene copolymer (PVC-olefin), or a graft copolymer of vinyl chloride onto chlorinated polyethylene (PVC-PECl).

3,772,410

TACK IN ETHYLENE-PROPYLENE RUBBERS BY ADDING A C_5–C_{10} OLEFIN POLYMER AND A TACKIFIER

Joginder Lal, Akron, and Paul H. Sandstrom, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 1, 1971, Ser. No. 158,719

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 A **15 Claims**

The building tack of ethylene-propylene rubber (EPM) or ethylene-propylene-diene rubber (EPDM) is synergistically increased by the addition thereto of (1) up to 5.0 p.h.r. of a conventional tackifier and (2) a polymer of C_5–C_{10} α-olefin (when employing a peroxide cure) of a copolymer of (a) 80–98% of a C_3–C_{10} α-olefin and (b) 20–2% of a C_5–C_{30} non-conjugated diene or polyene (when employing a sulfur cure). The weight ratio of EPM or EPDM to such polymer or copolymer is between 90:10 and 50:50.

3,772,411

ALKALI METAL SALTS OF ARALKANOIC OR ARALKENOIC ACIDS TO IMPROVE DYEABILITY OF POLYOLEFIN COMPOSITIONS

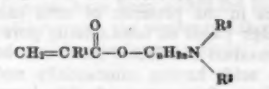
Christopher W. Uzelmeier, Laurel Springs, and Carl W. Schroeder, Cherry Hill, N.J., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,478

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 B **2 Claims**

This invention provides improved polyolefin compositions which are comprised of (a) a poly-1-monoolefin, (b) a copolymer of ethylene and an aminoalkyl acrylate compound having the following formula:



wherein R^1 is hydrogen or methyl, R^2 and R^3 are either hydrogen or a lower alkyl group, and n is an integer of from 1 to 4, inclusive, and (c) an alkali metal salt of an aralkanoic or aralkenoic acid. In addition to the components that are hereinbefore set forth, the compositions of this invention are modified for some uses by addition of an acrylonitrile-butadiene-styrene-terpolymer.

3,772,412

HYPOHALOGENATION OF GEM-DIPHOSPHONATE ESTERS AND PHOSPHONOACETATE ESTERS

Oscar T. Quimby, Colerain Township, Hamilton County, Ohio, and James B. Prentice, Batesville, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation of application Ser. No. 770,782, Oct. 25, 1968, which is a continuation-in-part of application Ser. No. 587,417, Oct. 18, 1966, both now abandoned. This application June 28, 1971, Ser. No. 157,703

Int. Cl. C07f *9/40*

U.S. Cl. 260—932 **14 Claims**

A process for the production of mono- and dihalogenated gem-diphosphonate esters (C_3–C_8) and mono- and dihalogenated phosphonoacetate esters (C_5–C_7) is disclosed. Dibrominated and diiodated gem-diphosphonate esters containing alkyl groups having three to eight carbon atoms, dichlorinated gem-diphosphonate esters containing alkyl groups having from 7 to 8 carbon atoms,

and monohalogenated gem-diphosphonate esters containing alkyl groups having from 7 to 8 carbon atoms, as novel compounds, are also disclosed. The gem-diphosphonate esters are useful as intermediates in the synthesis of detergent builders and as extreme pressure and anti-wear additives in lubricant compositions. The phosphonoacetate esters are useful as extreme pressure and anti-wear additives in lubricant compositions.

3,772,413

1-CYANO-2-IMINO-3,3-DIPHENYLPYRROLIDINES

Hermann Bretschneider, Wilhelm Klötzer, and Rudolf Franzmair, Innsbruck, Austria, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Aug. 1, 1969, Ser. No. 846,916, now Patent No. 3,665,012. Divided and this application Oct. 8, 1971, Ser. No. 187,839

Claims priority, application Switzerland, Aug. 7, 1968, 11,854/68

Int. Cl. C07d *27/04*

U.S. Cl. 260—326.62 **2 Claims**

Novel 2-iminopyrrolidines substituted in the 1-position are prepared from 2-amino-Δ'-pyrrolines. The novel pyrrolidines are useful as anti-diabetic and hypoglycemic agents since they effect a lowering of the blood sugar content in warm blooded animals.

3,772,414

PREPARATION OF ESTERS OF PHOSPHORUS ACIDS

Joseph W. Baker and Ignatius Schumacher, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 104,171, Jan. 5, 1971. This application June 24, 1971, Ser. No. 156,562

Int. Cl. C07f *9/08, 9/16*

U.S. Cl. 260—973 **16 Claims**

Esters of phosphorus acids are prepared by an improved process whereby thiol- or hydroxyl-containing organic materials and phosphorus halides are reacted at specified temperatures in the presence of urea catalysts thereby providing high yields of substantially pure esters and allowing preparation of selected mono-, di- and tri-esters of phosphorus acids having substantially no side reactant contaminations. By means of this improved process, mono-, di- and tri-esters of phosphorus acids may be selectively prepared. They are useful as plasticizers and processing aids, and as intermediates in the preparation of plasticizers, oil additives and functional fluids.

3,772,415

PROCESS FOR PREPARING YARN PACKAGES

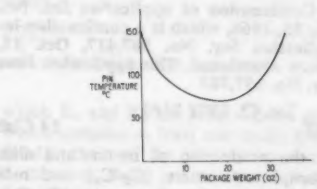
Gwylfa Thomas and Brian William Jenkins, Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 13, 1971, Ser. No. 207,247

Claims priority, application Great Britain, Dec. 16, 1970, 59,716/70

Int. Cl. B29c *25/00*

U.S. Cl. 264—234 **4 Claims**



Process and apparatus for minimising the variation in through package retraction that occurs in packages of freshly drawn thermoplastic yarn by heating the yarn after drawing according to a defined programme.

3,772,416

REHYDRATION AND PRESSURE-SINTERING OF HOT-PRESSED ALUMINA STRUCTURES

Ronald L. Clendenen, Orinda, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 54,608, July 13, 1970. This application Oct. 18, 1971, Ser. No. 190,308

Int. Cl. C04b *35/60*

U.S. Cl. 264—332 **3 Claims**

Finely grained aluminous ceramic compositions having densities of at least 95 percent of their theoretical maximum are produced with improved efficiency by a three step hot pressing process of (1) maintaining finely divided alumina precursors and Fourth Period transition metal oxide precursors at elevated temperature and pressure to decompose a major proportion of the precursors to ceramic oxides and form a solid body; (2) adding a controlled amount of water to the resulting body; and (3) heating the aquated product and applying pressure to complete the decomposition and densification.

3,772,417

METHOD FOR IMPROVING PHYSICAL PROPERTIES OF SPRAY SPUN FIBROUS SHEET MATERIALS

Clifford M. Vogt, 15 Fox Chase Road, Madison, N.J.

No Drawing. Continuation of abandoned application Ser. No. 695,571, Jan. 4, 1968. This application Oct. 28, 1970, Ser. No. 84,868

Int. Cl. B29c *17/02, 25/00*

U.S. Cl. 264—230 **9 Claims**

The physical properties of spray spun nonwoven fibrous sheets are improved by a drawing operation which involves a two stage stretch with intermediate heat relaxation. The stretching or drawing operation can be effected either uniaxially or multiaxially. The product produced by the present invention has improved tensile strength over single drawing operations and in addition, higher total stretches and tensile strengths can be achieved compared to single draw techniques.

3,772,418

MOLDING PROCESS FOR IMIDAZOPYRROLONE POLYMERS

Charles L. Johnson, Houston, Tex., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

No Drawing. Filed Oct. 29, 1971, Ser. No. 193,980

Int. Cl. B29f *5/02;* **C08g** *20/20*

U.S. Cl. 264—294 **3 Claims**

A process for producing shaped articles of imidazopyrrolone polymers comprising molding imidazopyrrolone polymer molding powder under pressure and at a temperature greater than 475° C. Moderate pressures may be employed. Preferably, prior to molding, a preform is prepared by isostatic compression. The preform may be molded at a relatively low initial pressure and temperature; as the temperature is increased to a value greater than 475° C., the pressure is also increased.

3,772,419

METHOD FOR PRODUCING NON-METALLIC BEAM STRUCTURES

Peter K. Schoening, 5807 NE. 151st St., Bothell, Wash. 98011

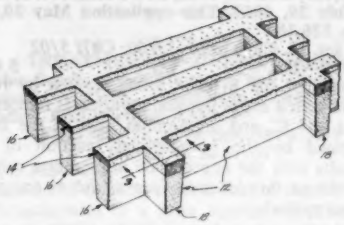
Filed July 2, 1970, Ser. No. 51,998

Int. Cl. B29c *5/08*

U.S. Cl. 264—112 **4 Claims**

The method of producing a rigid resin-bonded nonmetallic beam structures involves molding a tensilely strong substrate of fiber-reinforced liquid polymeric material and molding thereon a compressively strong stratum

composed of a mass of non-compressible particles arranged with compressive load-transmitting contact throughout including intermixing in said stratum liquid polymeric material and thereafter hardening the poly-

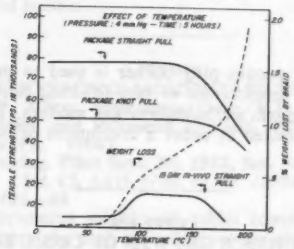


meric materials to integrally bond the fibers of said substrate and the particles of said stratum into a beam with a tensile-reinforced substrate and a compression-strengthened superposed stratum.

3,772,420
METHOD FOR IMPROVING THE IN-VIVO STRENGTH OF POLYGLYCOLIC ACID

Arthur Glick, Danbury, and James B. McPherson, Jr., Cos Cob, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Original application Dec. 23, 1968, Ser. No. 786,049, now Patent No. 3,626,948. Divided and this application Sept. 7, 1971, Ser. No. 178,499
Int. Cl. B29c *25/00*
U.S. Cl. 264—102 **4 Claims**


EFFECT OF TEMPERATURE
(PRESSURE : 4 mm Hg — TIME : 5 HOURS)
PACKAGE STRAIGHT PULL
PACKAGE KNOT PULL
WEIGHT LOSS
15 DAY IN-VIVO STRAIGHT PULL
TENSILE STRENGTH (PSI) (IN THOUSANDS)
% WEIGHT LOST BY HEAT
TEMPERATURE (°C)

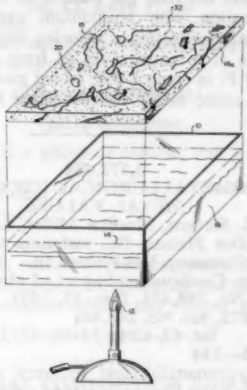
Polyglycolic acid in shaped form (i.e. a suture) which is substantially free from vaporizable impurities is provided which has significantly greater in-vivo strength retention than shaped polyglycolic acid containing said vaporizable impurities. The improved polyglycolic acid is prepared by vacuum heating shaped polyglycolic acid containing vaporizable impurities to vaporize the impurities therefrom, and then removing the vaporized impurities from the polyglycolic acid. An apparatus for conveniently carrying out the above process is also provided.

3,772,421
PROCESS FOR MAKING PIGMENTED ART OBJECTS

Dale W. Costich, Rte. 1, Box 45A, Brush Prairie, Wash. 98606

Filed Apr. 18, 1972, Ser. No. 245,222
Int. Cl. B29c *9/00*
U.S. Cl. 264—74 **7 Claims**

A process for creating a unique artistic colored design on the surface of a suitable base material. In the preferred embodiment of the invention, paraffin and water are heated in a mold until the paraffin melts, forming an even molten layer floating atop the water. While the paraffin layer remains molten, pigments of varying types are poured or dropped into the layer. Each of the pigments is of a type which is more dense than paraffin but preferably less dense than water, and immiscible with respect to both so that no diffusion of the pigments may occur in either medium. Because of their greater density, the pigments sink through the molten paraffin layer until they



reach the interface between the paraffin and the water. At this point, either because their density is less than that of the water or because of surface tension factors, they sink no further but rather maintain contact with the under-surface of the molten paraffin layer. After the desired quantities of pigments have been added the paraffin layer is allowed to solidify, with the pigments adhering permanently to its under-surface to form a uniquely colored and textured design.

3,772,422
PROCESS FOR THE SELECTIVE RECOVERY OF CHROMIUM FROM CHROMIUM CONTAINING MATERIALS AND SOLUTIONS

Melvin L. Taylor, 5990 Dudley St., Arvada, Colo. 80002

Filed Sept. 7, 1971, Ser. No. 178,336
Int. Cl. C01g *37/02*
U.S. Cl. 423—56 **7 Claims**

This invention relates to a process for the selective recovery of chromium from oxidic nickeliferrous ores such as low grade lateritic, liminite ores containing chromium along with nickel, cobalt, and substantial amounts of iron. The process of the invention involves the dissolution of chromium and other metals in nickeliferrous lateritic ores using concentrated nitric acid. Nitric acid of 40–60% concentration is premixed with ore and heated to a temperature of 110°–140° C., preferably 110°–120° C., in an autoclave whereby the chromium, iron and other acid soluble non-ferrous metals are leached from the ore. The leach solution and the undissolved solids are then heated further in the temperature range of 140°–230° C. in an autoclave whereby most of the iron nitrate in solution hydrolyzes to form iron oxide and nitric acid while the chromium and other non-ferrous metals remain in solution. After the liquid-solids separation, the clarified mixed nitrates liquor is evaporated until the metal nitrate hydrates are crystallized from the nitric acid solution. The metal nitrate hydrate crystals are separated from 40–60% nitric acid solution.

3,772,423
HYDROMETALLURGICAL RECOVERY OF METAL VALUES

Laurence G. Stevens, Marilyn Miller, and Leonhard A. Goeller, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 211,069, Dec. 22, 1971. This application June 19, 1972, Ser. No. 263,891
Int. Cl. C01g 53/06, 53/12
U.S. Cl. 423—144 7 Claims

In the hydrometallurgical recovery of metal values from ores and the like, the method of improving subsequent extraction with ammonium carbonate solution which comprises effecting a reducing step by means of a reducing gas at a temperature of from about 1000° to about 1800° F. in contact with added gaseous sulfur compound and added sulfur and/or added hydrogen halide.

3,772,424
HYDROMETALLURGICAL RECOVERY OF METAL VALUES

Laurence G. Stevens, Marilyn Miller, and Leonhard A. Goeller, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 208,421, Dec. 15, 1971. This application June 2, 1972, Ser. No. 263,361
Int. Cl. C01g 53/06, 53/12
U.S. Cl. 423—144 11 Claims

In the hydrometallurgical recovery of metal values from ores and the like, the method of improving subsequent extraction with ammonium carbonate solution, which comprises effecting a reducing step by means of a reducing gas at a temperature of from about 1000° to about 1800° F. in contact with added hydrogen halide or precursor thereof. In another embodiment, both the added hydrogen halide and added sulfur are utilized in the reducing step.

3,772,425
TREATMENT OF HALOGEN-CONTAINING GAS MIXTURE

Chia-Chen C. Kang, Princeton, and Robert A. Schreiber, Cranford, N.J., assignors to Pullman Incorporated, Chicago, Ill.

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,882
Int. Cl. B01d 53/34; C01b 7/00
U.S. Cl. 423—239 24 Claims

This invention relates to a process for the purification of a halogen effluent obtained from the oxidation of an inorganic halide in the presence of an oxygen and nitrogen containing compound and involves contacting the effluent mixture containing not more than 1.5 weight percent water, hydrogen halide, halogen, oxygen and nitroxyl halide at a temperature of from about room temperature to about 175° F. under a pressure of from atmospheric to 50 atmospheres, with porous silica, maintaining the mole ratio of hydrogen halide to higher valent nitrogen compounds between about 2:1 and about 100:1. The porous silica, which is a type having a surface area in excess of 50 m.²/g., acts as a catalyst to convert the nitroxyl halide and nitrogen dioxide which may also be present in the gaseous effluent to nitrosyl halide and can be employed alone or in admixture or composite with other metal oxides where the major portion of the mixture or composite composition is silica and where the surface area of the composition or composite is greater than 50 m.²/g. The resulting nitrosyl halide can be easily separated from the halogen product by absorption in sulfuric acid or other suitable extraction agent or by distillation so that a halogen product of greater than 99.9% purity with respect to nitrogen contaminants can be recovered as the product of the process.

3,772,426
SALTS OF THE $B_{11}H_{14}^-$ ANION

Victor D. Aftandilian, Weston, Mass., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

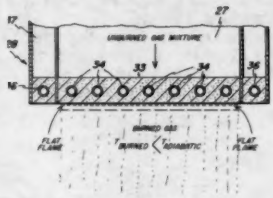
Continuation-in-part of abandoned application Ser. No. 20,835, Apr. 8, 1960, and a division of application Ser. No. 245,463, Dec. 18, 1962, now Patent No. 3,458,531, dated July 29, 1969. This application May 20, 1969, Ser. No. 826,184
Int. Cl. C01b 6/14, 35/00; C07f 5/02
U.S. Cl. 423—286 5 Claims

Metal salts of the $B_{11}H_{14}^-$ anion formed by reacting decaborane with a metal borotetrahydride at temperatures of at least 45° C. and ammonium salts of the $B_{11}H_{14}^-$ anion formed by the metathetical reaction of metal $B_{11}H_{14}^-$ salts with the appropriate ammonium salts. The $B_{11}H_{14}^-$ salts of this invention are useful as components of high energy fuels.

3,772,427
COMBUSTION PROCESS FOR PRODUCING HIGH SURFACE AREA SILICA

George E. Moore, Scotia, N.Y., assignor to General Electric Company

Original application July 15, 1969, Ser. No. 841,708. Divided and this application June 14, 1971, Ser. No. 152,707
Int. Cl. C01b 7/08, 33/18
U.S. Cl. 423—337 5 Claims

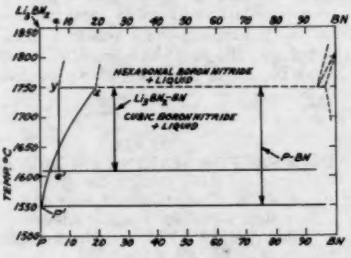


A cooled porous plug burner is used to produce and control the temperature of non-adiabatic flames of premixed hydrogen/air/halosilane gas mixture. The process can be conducted as either a continuous or batch operation.

3,772,428
CONTINUOUS GROWTH OF CUBIC BORON NITRIDE

Robert C. De Vries, Burnt Hills, and James F. Fleischer, Scotia, N.Y., assignors to General Electric Company

Filed Jan. 28, 1971, Ser. No. 110,514
Int. Cl. C01b 21/06, 35/00; B01d 9/00
U.S. Cl. 423—290 4 Claims



A previously unknown composition line has been defined in the cubic boron nitride-stable region for the Li-B-N

system. By (a) selecting a composition on this new line, (b) subjecting the given composition to constant pressure, while rapidly reaching an initial crystallization temperature and then (c) very slowly raising the temperature, the crystallization of cubic boron nitride can be initiated and continued.

3,772,429
TREATMENT OF CARBON FIBERS

Malcolm Basche, West Hartford, and Daniel A. Scola, Glastonbury, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 18, 1970, Ser. No. 47,491
Int. Cl. C01b 31/07
U.S. Cl. 423—447 3 Claims

A method of treating carbon fiber to improve its bonding characteristics in a resin matrix comprising heating the fiber to 1000°–1500° C. and exposing the heated fiber to a nitrogen atmosphere having a moisture concentration of 1–5 mol percent for a period of up to 28 seconds.

3,772,430
PROCESS FOR THE PRODUCTION OF LYOPHILIZED EFFERVESCENT PHARMACEUTICAL COMPOSITIONS

Pierre Blonde, Avenue Noel, 19 bis, Saint-Maur-des-Fosses, Val de Marne, France

No Drawing. Original application Apr. 14, 1970, Ser. No. 28,550, now abandoned. Divided and this application Nov. 15, 1971, Ser. No. 199,012
Claims priority, application France, Apr. 15, 1969, 11,589
Int. Cl. A61k 9/00
U.S. Cl. 424—44 3 Claims

Lyophilized effervescent pharmaceutical compositions which dissolve rapidly in water while having improved mechanical strength and resistance to atmospheric moisture are made by lyophilizing effervescent materials below 0° C. in admixture with lyophilization adjuvants such as sucrose and lactose.

3,772,431
EFFERVESCENT MOUTHWASH TABLET

William P. Mlkvy, Hollystone Farm, R.D. 2, Holland, Pa. 18966, and Raymond J. Tucci, 347 Saly Road, Yardley, Pa. 19067

No Drawing. Filed Sept. 21, 1972, Ser. No. 290,914
Int. Cl. A61k 9/00, 11/02, 11/04
U.S. Cl. 424—44 4 Claims

An effervescent mouthwash tablet comprising an effervescent couple, and an astringent-desensitizing agent. Flavoring, color, sweetener and other additives may be added to the basic formula.

Upon dissolution a solution is produced which gives a cleansing mouthwash effect, effective desensitizing action to the teeth, and gingival toning. This solution forms a desirable and unique basis for the addition of further agents which will aid in control of plaque, breath sweetening, anti-microbial effect, decay prevention, water purification, and long lasting effect of all above mentioned.

3,772,432
CARTILAGE COMPOSITIONS FOR DENTAL USE

Leslie L. Balassa, Blooming Grove, N.Y., assignor to Lescarden Ltd., Goshen, N.Y.

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,662
Int. Cl. A61k 5/00, 17/00
U.S. Cl. 424—95 17 Claims

Cartilage powder is described herein for use in dental applications including the treatment and prevention of dry sockets, gingival tissues and mandibular cystectomies, the cartilage powder being used in the form of a paste of low mobility.

3,772,433
TREATMENT OF HEPATOPATHIAS WITH SACCHARIDES

Johannes Bircher, Bern-Spiegel, Switzerland, and Rudolf Weidenhagen, Ulversheim uber Mainz, Hans Reinicke, Mannheim, Senta Leonhauser, Ilvesheim, and Ingeborg Bauer, Karlsruhe-Waldstadt, Germany, assignors to Suddeutsche Zucker Aktiengesellschaft, Mannheim, Germany, and Laevosan Gesellschaft mbH & Co. KG, Linz, Austria, fractional part interest to each

Filed Dec. 23, 1970, Ser. No. 100,994
Claims priority, application Germany, July 7, 1970, P 20 33 677.0
Int. Cl. A61k 27/00
U.S. Cl. 424—180 4 Claims

Pharmaceutical compositions comprising at least one of the following substances:

(a) a saccharide of the general formula:

$$(gal)_n\text{-saccharose},$$

in which gal is a gelactose residue; and n is an integer of 1 or higher;
(b) a oligofructosan;
(c) a polyfructosan;
(d) a kestose.

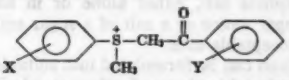
are outstandingly useful for the treatment and prophylaxis of hepatopathias, dyspepsias, dysbioses and nutritional disturances of unweaned infants and related symptoms.

3,772,434
INSECTICIDAL COMPOSITION AND METHOD CONTAINING ARYL-METHYL PHENACYL SULFONIUM TETRAFLUOROBORATES

Kenneth Wayne Ratts, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application May 28, 1971, Ser. No. 148,196, now Patent No. 3,723,534. Divided and this application Nov. 2, 1972, Ser. No. 303,185
Int. Cl. A01n 9/12
U.S. Cl. 424—185 14 Claims

An insecticidal composition and method containing compounds of the formula



These compositions are useful in controlling soil insects of the genus Diabrotica.

3,772,435
METHOD OF USING STEROID ACETONIDES AS GROWTH PROMOTING AGENTS

Robert Daniel Wilbur, Titusville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 2, 1971, Ser. No. 195,040
Int. Cl. A61k 17/00
U.S. Cl. 424—241 9 Claims

Enchancement of the growth rate of female ruminant animals by parenterally administering to said animals, in a single dose, a growth-enchancing amount of a selected derivative of certain halogenated 16α,17α-dihydroxysteroids of the pregnane series.

3,772,436
DIAGNOSTIC METHOD FOR DETERMINATION OF LACTASE DEFICIENCY USING RADIOACTIVE LACTOSE

Edward Shanbrom, Santa Ana, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,959
Int. Cl. A61k 27/04
U.S. Cl. 424—1 3 Claims

A diagnostic test for the determination of lactase deficiency which consists of oral administration of two doses

of lactose, which may be radiolabeled, the second said dose including a dose of lactase enzyme, and measurement of the blood glucose level and/or the radiolabeled carbon dioxide in the expired breath following each said administration.

3,772,437

HETEROCYCLIC AMINES AS ANTIFUNGAL ACTIVE SUBSTANCES

Karl Gätzi, Basel, Switzerland, assignor to Geigy-Chemical Corporation, Ardsley, N.Y.

No Drawing. Original application Nov. 22, 1968, Ser. No. 778,328, now Patent No. 3,634,401, dated Jan 11, 1972. Divided and this application Oct. 8, 1971, Ser. No. 187,887

Int. Cl. A01n *9/22*

U.S. Cl. 424—244 **14 Claims**

2-amino-azacyclotriadecenes in which the nitrogen atom of the amino group is unsubstituted or bears certain substituents as well as their addition salts with acids are described as antifungal agents the effectiveness of which is considerably superior to that of the known 2-amino-azacycloheptenes. A typical compound is 2-n-butylamino-azacyclotridec-1-ene.

3,772,438

ANTIBIOTIC COMPOSITIONS CONTAINING COUMERMYCIN

Harold Leon Newmark, Maplewood, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation of abandoned application Ser. No. 721,156, Apr. 15, 1968. This application May 4, 1971, Ser. No. 140,277

Int. Cl. A61k *21/00*

U.S. Cl. 424—181 **10 Claims**

A therapeutic composition is described which comprises a mixture of (1) coumermycin and (2) a water-soluble polymeric phosphate salt, either alone or in admixture with either a sugar amine or a salt of a sugar amine with a medicinally acceptable acid.

The composition can be formulated into suitable dosage forms for oral administration and, when so administered, satisfactory blood levels are achieved at relatively low dosages.

3,772,439

COMPOSITION AND PROCESS FOR THE STIMULATION OF GROWTH AND DEVELOPMENT OF ANIMALS

Simon Oeriu and Ion Oeriu, both of Strada Herastrau 15, Bucharest, Rumania

No Drawing. Continuation-in-part of abandoned application Ser. No. 656,015, July 26, 1967, and a continuation-in-part of application Ser. No. 656,059, July 26, 1967, now Patent No. 3,537,838. This application July 31, 1967, Ser. No. 657,068

Claims priority, application Rumania, July 26, 1966, 51,945; July 27, 1966, 51,949

Int. Cl. A61k *27/00*

U.S. Cl. 424—249 **11 Claims**

A composition for the stimulation of the growth and development of plants and the stimulation of the growth and development of animals comprising, as its active ingredient, a member selected from the group consisting of cysteine, homocysteine and their cyclic derivatives and salts thereof, and, as a stabilizer for such active ingredient, a member selected from aldehydes and aldehyde-releasing compounds. Also, a process for the stimulation of the growth and development of plants and for the stimulation of the growth and development of animals comprising administering such a composition.

3,772,440

METHOD FOR THE TREATMENT OF PARKINSONISM AND DEPRESSION

M Krishna Menon, Van Nuys, Calif., assignor to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

Filed Jan. 7, 1972, Ser. No. 216,199

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **3 Claims**

Pharmaceutical compositions containing 2(p-nitrobenzylthio)-imidazoline or a therapeutically acceptable salt thereof and a method for treating of parkinsonism and depression by using the same, are described.

3,772,441

ANTI-INFLAMMATORY IMIDAZOLES

Joseph George Lombardino, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Original application Nov. 16, 1970, Ser. No. 90,077, now Patent No. 3,707,475, dated Dec. 26, 1972. Divided and this application May 8, 1972, Ser. No. 251,522

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **21 Claims**

2,4- and 4,5 - diarylimidazoles and acid addition salts thereof, a novel class of anti-inflammatory agents.

3,772,442

MAGNESIUM PHENOLIC LAXATIVE COMPOSITIONS AND METHODS OF USE

Alfred Halpern, Great Neck, and Ernest J. Sasmor, Yonkers, N.Y., assignors to Synergistic, Norwalk, Conn.

No Drawing. Application Nov. 14, 1969, Ser. No. 871,293, now Patent No. 3,595,750, which is a division of application Ser. No. 775,754, Dec. 3, 1968, now Patent No. 3,526,635, which in turn is a continuation-in-part of abandoned application Ser. No. 550,636, May 17, 1966. Divided and this application Oct. 22, 1970, Ser. No. 103,362

Int. Cl. A61k *27/00*

U.S. Cl. 424—274 **5 Claims**

Methods for achieving an increased pharmacologic response of phenolic laxative compounds through use of the magnesium ion as well as methods for achieving an improved pharmacologic and therapeutic response with magnesium phenolic laxative compounds and laxative compositions containing the same are disclosed.

3,772,443

5-BROMO-5-NITRO-1,3-DIOXANE, PROCESS AND ANTIMICROBIAL COMPOSITIONS

Richard Wessendorf, Hilden, and Horst Bellinger, Dusseldorf, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

No Drawing. Original application Apr. 17, 1970, Ser. No. 29,692, now abandoned. Divided and this application Oct. 20, 1971, Ser. No. 190,827

Claims priority, application Germany, Apr. 22, 1969, P 19 20 298.3

Int. Cl. A01n *9/28*

U.S. Cl. 424—278 **4 Claims**

5-bromo-5-nitro-1,3-dioxane use in antimicrobial compositions and its use in preventing the growth of microorganisms.

3,772,444

5-ARYL AND HETEROARYLPHENYL SULFONIC ACIDS TO TREAT INFLAMMATION

Lewis H. Sarett, Skillman, and John Hannah, Matawan, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application Apr. 20, 1970, Ser. No. 30,325, now Patent No. 3,691,185, which is a continuation-in-part of application Ser. No. 836,610, June 25, 1969, now Patent No. 3,714,232. Divided and this application July 10, 1972, Ser. No. 270,347

Int. Cl. A61k *27/00*

U.S. Cl. 424—311 4 Claims

5-aryl and heteroarylphenyl sulfonic acids and their derivatives are described and the processes for preparing the same are disclosed. These compounds exhibit anti-inflammatory properties and also possess an effective degree of anti-pyretic and analgesic activity.

3,772,445

GERMICIDAL AND FUNGICIDAL AGENT AND USE THEREOF

Teruhisa Noguchi and Yoshinobu Hashimoto, Fujisawa, Yoshio Uchiyama, Takaoka, and Michio Ueyama, Tokyo, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

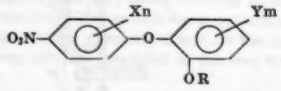
No Drawing. Filed Nov. 23, 1970, Ser. No. 92,151

Claims priority, application Japan, Dec. 1, 1969, 44/95,747

Int. Cl. A01n *9/20*

U.S. Cl. 424—340 1 Claim

A germicidal and fungicidal agent which is composed of a specific novel diphenyl ether compound represented by a following general formula.



which is characterized by excellent germicidal and fungicidal activity and less toxicity. The compound can be used for ingredient of a sterilizing agent, an antiseptic detergent composition, a slime control agent and a fungus inhibitor for plastics.

3,772,446

PROCESS FOR PREPARING AN AQUEOUS α-MONOGLYCERIDE OINTMENT BASE AND PRODUCT THEREOF

Kåre Larsson, Marklandsgatan 31, Goteborg, Sweden

No Drawing. Continuation of abandoned application Ser. No. 671,802, Sept. 29, 1967. This application May 4, 1970, Ser. No. 48,790

Claims priority, application Sweden, Sept. 30, 1966, 13,181/66

Int. Cl. A61k *9/06*

U.S. Cl. 424—365 9 Claims

An aqueous ointment base containing 50–90% water and hydrophilic crystals of an α-monoglyceride of a 12–18 C fatty acid. It may be prepared by keeping an aqueous dispersion of particles of the α-monoglyceride above its transition temperature until the particles have absorbed water and been transformed into microscopic liquid-crystalline particles and slowly cooling the dispersion under stirring to ambient temperature.

3,772,447

METHOD OF MAKING BUTTER

Gunter Karl Damerow, Hamburg, Germany, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Mar. 25, 1971, Ser. No. 128,098

Int. Cl. A23c *15/00*

U.S. Cl. 426—342 10 Claims

Highly concentrated cream is heated and evaporated at least sufficiently to break its oil-in-water emulsion; and there is added to at least part of the resulting fatty mass, while stirring it, such a quantity of water that the mass contains the water quantity desired in the finished butter. Salt and possibly other substances are also added; and the mass is subsequently cooled at least partly while mechanically kneading it, to obtain the butter.

ERRATA

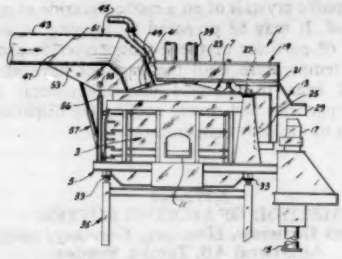
For Classes 426—274 thru 426—420 see: Patents Nos. 3,772,035 thru 3,772,040

ELECTRICAL

3,772,448
SMOKE ELBOW FOR ELECTRIC FURNACE

Riley J. Bowermaster, Hartford, Ill., and Robert H. Becker, Florissant, Mo., assignors to Laclede Steel Company, St. Louis, Mo.

Filed Feb. 5, 1973, Ser. No. 329,437
Int. Cl. F27d *17/00*
U.S. Cl. 13—10 **13 Claims**

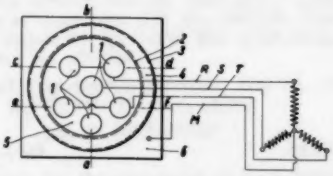


A tiltable electric furnace comprising an open-top chamber and a roof adapted to be lifted off the top of the chamber and movable between an operating position in which it is at least partially clear of the chamber for charging said chamber from the top. The roof has a smoke outlet for discharge of gases from within said chamber when the furnace is in operation with the roof in its operating position. A smoke elbow is provided for conducting gases from the smoke outlet in the roof to a duct, the elbow being mounted independently of the roof for movement relative to the chamber between an operating position wherein its inlet end is in communication with said smoke outlet for conducting gases from the outlet to the duct, and a retracted position wherein its inlet end is clear of the roof for movement of the roof to its said retracted position, the duct being movable between an operating position wherein its inlet end is engaged with the outlet end of the elbow when the elbos is elbow its operating position, and a retracted position wherein its outlet end is clear of the elbow for movement of the elbow to its said retracted position.

3,772,449
PLANT FOR THE ELECTRIC SLAG REFINING OF METALS

Ernst Rudolf Fischer, Vienna, Austria, assignor to Gebr. Bohler & Co. AG, Vienna, Austria

Filed June 9, 1972, Ser. No. 261,512
Claims priority, application Germany, July 1, 1971, P 21 32 711.7
Int. Cl. F27d *11/10*
U.S. Cl. 13—12 **7 Claims**

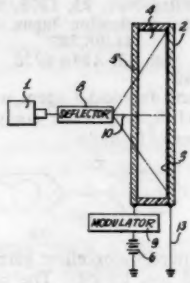


The plant comprises an ingot mold, adapted to hold a slag layer, means for cooling said ingot mold with a liquid, a polyphase a.c. supply system having at least three phase conductors, and at least two pairs of fusible electrodes extending into said ingot mold and adapted to extend into said slag layer. The fusible electrodes are arranged so that in a top plan view the electrodes of a first pair thereof are spaced apart on a first axis and the electrodes of each additional pair thereof are spaced apart on an additional axis, which is normal to said first axis. The fusible electrodes are connected to said phase conductors in an arrangement which is symmetric with respect to the electrodes disposed on said first axis. The fusible electrodes are adapted to be fused down by heat generated as a result of an electric current flowing through said fusible electrodes so that molten metal is formed and is caused to solidify in said ingot mold to form a solid ingot when said mold is cooled with a liquid.

3,772,450
SCANNING APPARATUS UTILIZING A LASER BEAM

Raymond Babigan, 4805-45th St. N.W., Washington, D.C.

Filed Mar. 30, 1972, Ser. No. 239,632
Int. Cl. H04n *3/00*
U.S. Cl. 178—7.3 **6 Claims**



A scanning apparatus which utilizes a laser beam of the type which is capable of ionizing a gaseous medium, thus providing an electrically conductive path through the gas. The laser beam is deflected in any desired manner and is then connected to a source of electrical power. The deflected beam and thus the ionized path, is directed toward a phosphorescent screen. By varying or modulating the electric power in the ionized beam the intensity of luminescence of the spot on the screen which is struck by the beam is correspondingly varied.

3,772,451
AERIAL CABLE GUARD

John Andrew Canavan, Agincourt, and William Robert Stewart, West Hill, both of Ontario, Canada, assignors to Bell Canada, Montreal, Quebec, Canada

Filed Jan. 26, 1973, Ser. No. 326,892
Int. Cl. H02g *7/00, 7/10*
U.S. Cl. 174—41 **2 Claims**

A plastic chevron-shaped guard is affixed to the supporting messenger strand of an aerial cable. The chevron protects the

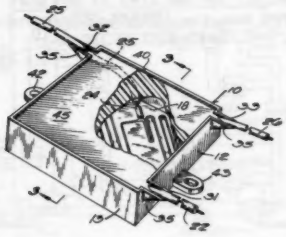
cable from damage due to mastication by squirrels and the like and yet permits inspection and access to it.

3,772,452

ENCAPSULATED ELECTRICAL DEVICE

Anton Burr Usowski, Mequon, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Apr. 17, 1972, Ser. No. 244,545
Int. Cl. H05k 5/06; H01c 1/02
U.S. Cl. 174—52 PE 7 Claims



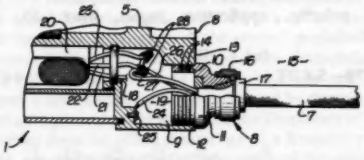
An encapsulated electrical device having an encapsulation tray which includes spout members extending from the sidewalls to facilitate the positioning of the lead wires during encapsulation of a substrate in the tray and also serves as a retaining means to prevent potting material from overflowing the walls of the tray. The spouts have constricting wall surfaces which facilitate a clamping action on the lead wires and slanted locating tabs are provided in the tray for positioning the substrate.

3,772,453

SEAL ARRANGEMENT FOR PUMP MOTOR LEADS

Terrance J. O'Brien, Anaheim, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.

Filed June 15, 1972, Ser. No. 262,947
Int. Cl. H02k 5/10
U.S. Cl. 174—65 SS 7 Claims



A secondary seal for submersible pump housings and comprising a resilient disc having a taper at its perimeter and plural tapered lead passing apertures adapted to snugly locally confine the motor leads and to maintain the resulting seal by perimetrical confinement and radial inward compression of the disc.

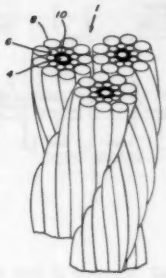
3,772,454

TORQUE BALANCED CABLE

Frederick W. Donecker, Madison, and Wilbert A. Lucht, Orange, both of Conn., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Nov. 22, 1972, Ser. No. 308,925
Int. Cl. H01b 7/00
U.S. Cl. 174—113 R 5 Claims

A torque balanced conductor cable includes between three and six strands spiraled together with the torque exerted by the cable being approximately equal to the torque exerted by the strands. Each strand includes an insulated conductor as a core with steel wires stranded therearound and the insulation extending into the interstices of the strands. Another species



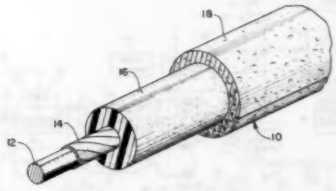
includes insulated conductors positioned in the outer valleys of the cable and a sheath extruded over the entire assembly. This second species may be used with the first species or with cables in which the strands have a steel wire core member.

3,772,455

FLAME AND MOISTURE RESISTING IMPREGNATING COMPOSITION FOR FIBROUS MATERIALS, AND PRODUCTS THEREOF

Paul Otis Nicodemus, and Henry Lewis Wilson, both of Chelmsford, Mass., assignors to General Electric Company, New York, N.Y.

Filed Dec. 22, 1972, Ser. No. 317,691
Int. Cl. H01b 7/28
U.S. Cl. 174—121 A 19 Claims



This disclosure includes a novel composition comprising a combination of halogenated rubber and polyphenyl with hydrated alumina and antimony trioxide for the impregnation of fibrous materials and imparting thereto resistance to flame and moisture; the flame and moisture resisting fibrous products which have been impregnated with said composition; and, improved insulated electrical conductors comprising combinations of polymeric materials and inorganic fibers which have been treated with the impregnating composition.

3,772,456

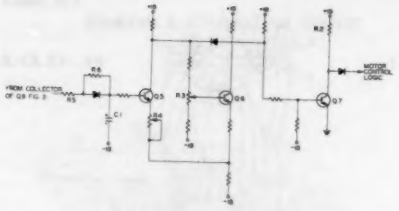
FAX CARRIER DETECTOR

William E. Richeson, Jr., and Joel K. Roach, both of Fort Wayne, Ind., assignors to The Magnavox Company, Fort Wayne, Ind.

Filed Mar. 26, 1970, Ser. No. 22,937
Int. Cl. H04n 1/32
U.S. Cl. 178—88 3 Claims

An improved scheme for effecting the selective energization of a facsimile or other receiver is disclosed in the form of a bistable trigger circuit which is responsive to predetermined signals indicative of the fact that transmission of information has begun or has ended to switch between its enable and disa-

ble states. The change of state of the trigger circuit is then effective to enable or partially disable the receiver. Provision is made whereby the turn-on time may be made substantially less

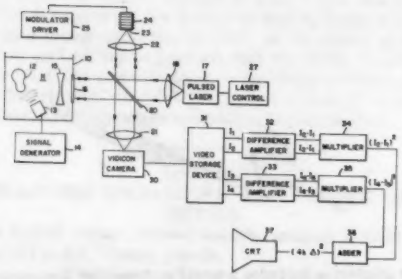


than the turn-off time so that the receiver will not turn-off due to noise, momentary line drop outs or other temporary interruptions in transmission.

3,772,457
SONIC IMAGE TRANSDUCER USING A STORAGE CAMERA

Albert Macovski, Palo Alto, Calif., assignor to American Express Investment Management Company, San Francisco, Calif.

Filed Mar. 29, 1971, Ser. No. 128,753
Int. Cl. H04n 7/18
U.S. Cl. 178—6.8 **24 Claims**

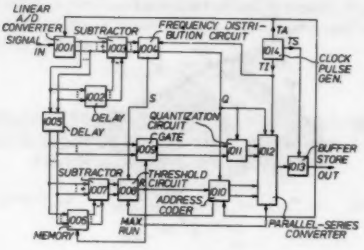


An acoustic to optical image converting system of the type in which an acoustic field originating from an object insonified by a sonic signal generating source is impressed on a reflective vibrating surface and illuminated with an object beam of coherent light and in which the reflected object beam is combined with a reference beam of coherent light to generate an optical interference pattern corresponding to the acoustic field. A pulsed laser and an interferometer are used to generate the object beam and reference beam and selected interference patterns derived from different phase combinations of the laser beams and sonic signals are projected on the face of the storage type television camera. Outputs from the television camera corresponding to specified image components are electronically processed by a variety of system embodiments with and without video storage devices to filter the desired image information and reconstruct an image or hologram of the original object. The sonic source can similarly be pulsed in co-ordination with the pulsed laser to increase the sensitivity of the image system.

3,772,458
METHOD FOR REDUCING THE BANDWIDTH OF COMMUNICATION SIGNALS

Franz May, Ulm/Donau, and Broder Wendland, Ay/Iller, both of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Sept. 15, 1971, Ser. No. 180,751
Claims priority, application Germany, Sept. 15, 1970, P 20 45 392.3; Sept. 24, 1970, P 20 46 974.3
Int. Cl. H03n 7/12
U.S. Cl. 178—6 **10 Claims**

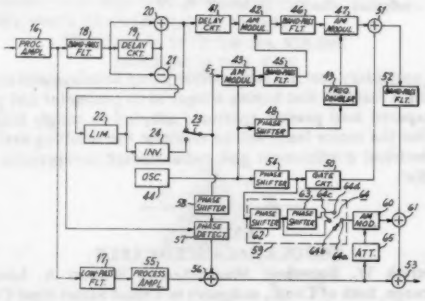


Method of reducing the bandwidth of communication signals to suppress data signals considered insignificant as being only slightly different from preceding signals, and transmitting a constant quantity of data each time interval. The significant or relative data signal values are selected out of the input data signals by transforming the input data input signal,e.g.by forming the difference between successive or adjacent scanning values, determining the frequency distribution of the amplitudes of the transformed signal within a given time interval to provide a control signal whose value depends on the frequency distribution and comparing the control signal with the input data signal, which has been delayed by the given time interval, to provide an output signal whenever the control signal is exceeded.

3,772,459
WHITE BALANCE CONTROL SYSTEM

Kazuhiko Nakajima, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 27, 1972, Ser. No. 238,509
Claims priority, application Japan, Mar. 30, 1971, 46/19039
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 BT **4 Claims**



A white balance control system comprised of a circuit for selectively controlling the phase of a signal having the same frequency as a color subcarrier signal of a chrominance signal;

a modulator for amplitude modulating the phase controlled color signal with a luminance signal, and an adder for combining the amplitude modulated signal with the chrominance signal to control the white balance in response to the selected phase of the color signal.

3,772,460

COLOUR SYNCHRONIZING SYSTEM FOR A PAL COLOUR TELEVISION RECEIVER

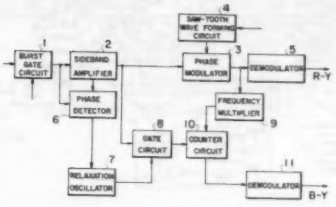
Yasumasa Sugihara, Kanagawa-ken, Japan, assignor to the General Corporation, Kawasaki-Shi, Japan

Filed Feb. 11, 1972, Ser. No. 225,396

Claims priority, application Japan, June 9, 1971, 46/41279

Int. Cl. H04n 9/46

U.S. Cl. 178—5.4 P **8 Claims**



A colour synchronizing system for a colour television receiver is constructed according to a signal transmission system in which a pair of colour signals effect simultaneous quadrature balanced modulation of a colour subcarrier with respect to first and second mutually perpendicular modulation axes, the second of which undergoes phase alternation of 180° for successive horizontal lines and in which the resulting colour television signal includes a colour sync signal rendering it possible to discern the alternating polarities of a chrominance signal. Said colour sync signal includes first and second components carried in the initial part of each horizontal line so as to appear concurrently or in succession and has a phase displacement of 90° to each other, the first component being of a fixed phase, and the second component being of a phase which is periodically switched in a manner corresponding to the phase alternation of the second modulation axis for successive horizontal lines. For use in the demodulation along one of the modulation axes which does not undergo phase reversal, a reference subcarrier is formed by deriving a subcarrier of a frequency equal to double the frequency of the colour subcarrier from an offset subcarrier of a frequency fsc $\pm 2n -$ 1/2 fH, where fsc denotes the frequency of the colour subcarrier, fH line frequency and n a positive integer, frequency dividing by two the subcarrier of a frequency equal to double the frequency of the colour subcarrier, and choosing either polarity of the resulting subcarrier.

3,772,461

COLOUR KILLER SYSTEM FOR COLOUR TELEVISION RECEIVER

Akira Horaguchi, Kawasaki, Japan, assignor to The General Corporation, Kawasaki-shi, Japan

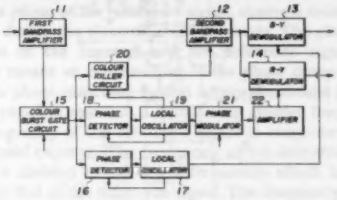
Filed Feb. 7, 1972, Ser. No. 224,132

Claims priority, application Japan, Feb. 13, 1971, 46/6269

Int. Cl. H04n 9/48

U.S. Cl. 178—5.4 CK **8 Claims**

A colour killer system in a colour television receiver is used with a signal transmission system such as PAL system in which a pair of colour signals effect simultaneous quadrature balanced modulation of a colour subcarrier with respect to a pair of mutually perpendicular modulation axes, with one of the axes being reversed 180° for alternate horizontal scanning lines. The resulting colour television signal contains a colour burst capable of providing distinction of the polarity of the



colour subcarrier that is reversed. Said colour killer system uses a subcarrier having an offset frequency of

$$fsc \pm [2n-1)2]fH$$

where fsc denotes the frequency of a colour subcarrier, fH a line frequency and n an integer is used to derive a colour killer signal.

3,772,462

METHOD AND APPARATUS FOR DETECTING ACHROMATIC PORTIONS IN A COLOR TELEVISION IMAGE

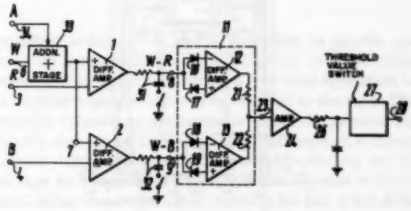
Hans-Dieter Schneider, Gross-Gerau, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Filed May 17, 1972, Ser. No. 254,163

Claims priority, application Germany, May 19, 1971, P 21 24 959.2

Int. Cl. H04n 9/04

U.S. Cl. 178—5.4 BT **12 Claims**



Detecting achromatic portions of a color television signal. A luminance signal is compared with each of two chrominance signals to generate two difference signals. When both difference signals are above zero, they are time averaged and threshold detected to generate a signal for use in prior art regulation.

3,772,463

CHROMINANCE AMPLIFIER WITH PROVISION FOR GAIN CONTROL AND COLOR KILLER ACTION

Shuzo Wakai, Kyoto, and Hitoshi Sugano, Takatsuki, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Feb. 24, 1972, Ser. No. 229,141

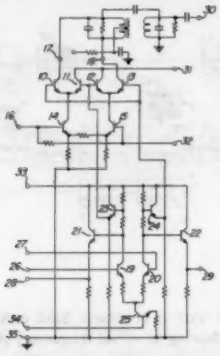
Claims priority, application Japan, Mar. 5, 1971, 46/12068

Int. Cl. H04n 9/48

U.S. Cl. 178—5.4 R **1 Claim**

A chrominance amplifier circuit, adapted to be formed in a monolithic integrated circuit, in which an automatic gain con-

trol function is performed by a circuit arrangement containing no capacitor, the automatic gain control function having no



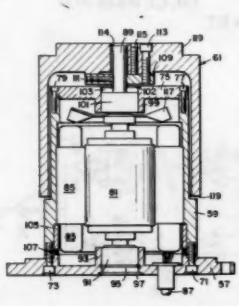
influence on the bandwidth characteristic of the amplifier so that the chrominance amplification operation can be stably performed.

3,772,464

ROTATING POLYGON MIRROR ASSEMBLY WITH AN INTERIOR MOTOR

Kingsley Chan, Saratoga, Calif., and Willard E. Buck, Mesa, Ariz., assignors to Spectrotherm Corporation, Santa Clara, Calif.

Filed Apr. 17, 1972, Ser. No. 244,473
Int. Cl. H04n *3/08*
U.S. Cl. 178—7.6 **14 Claims**



A compact optical scanner having a plurality of flat mirror elements formed on the outside surface of a polygon shaped cup-like element which is driven by an electrical motor interior of the cup. In addition to shielding provided by the mirror element itself, a ferromagnetic motor housing is provided for suppressing undesired electromagnetic radiation from the motor. The polygon mirror assembly is non-ferromagnetic, of light weight, and supported in a manner to be dynamically balanced.

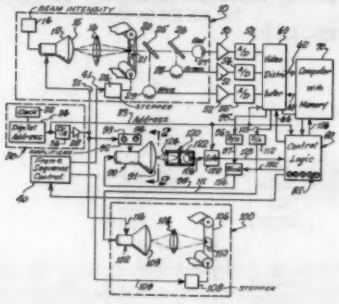
3,772,465

IMAGE MODIFICATION OF MOTION PICTURES

Petro Vlahos, Tarzana, and Wilton R. Holm, Santa Monica, both of Calif., assignors to The Association of Motion Picture and Television Producers Inc., Los Angeles, Calif.

Filed June 9, 1971, Ser. No. 151,254
Int. Cl. G03b *21/52, 33/00*; H04n *5/88*
U.S. Cl. 178—5.2 D **6 Claims**

Individual image areas of a previously recorded motion picture scene can be modified electronically despite relative movement of such areas from frame to frame. Video values for each image element are stored in digital form in the memory of a general purpose computer in association with identifying addresses. A selected object area to be modified is then defined by a list of addresses of the image elements bounding the object. Such boundary addresses are derived partly manually or visually by reference to a CRT display of a selected frame, with assistance from the suitably programmed computer which automatically extends the boundary address list from frame to frame. The computer is then programmed to recover from memory the video values for image elements within the area defined by each boundary address list, to per-



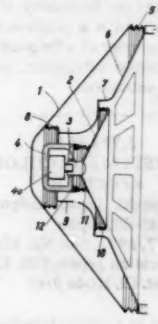
form the desired modification of each value, and to return the modified values to memory. The modification of each value typically requires reference to other image elements in the same frame or to corresponding image elements of adjacent frames, with computation of functions such as averages of the video values for such elements. Useful types of modification include changes of definition, contrast, hue and brightness, elimination of unwanted objects, reduction of graininess and other random noise, and insertion of color. After completion of the desired modification, each frame or group of frames is again recorded photographically, magnetically or on any desired storage medium.

3,772,466

LOUD SPEAKER SYSTEM

Erich Hossbach, Muhlen, Neumarkt, Germany, assignor to Faser- und Kunststoff Presswerk Romen K.G., a Kommanditgesellschaft

Filed Nov. 24, 1971, Ser. No. 201,749
Claims priority, application Germany, Nov. 25, 1970, P 20 57 905.9
Int. Cl. H04r *9/06*
U.S. Cl. 179—116 **7 Claims**



This invention relates to a loudspeaker system comprising a directly energized high frequency diaphragm and at least one

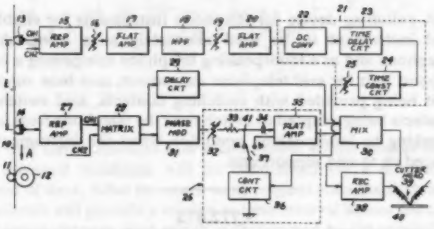
low frequency diaphragm accoustically coupled to the high frequency diaphragm through a substantially enclosed air space having a predetermined volume and surface area whereby the frequency of vibrations transmitted there through may be controlled.

3,772,467

SYSTEM FOR CUTTING AND RECORDING ON A RECORD DISC

Isao Ohwaki, Tokyo, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed June 22, 1971, Ser. No. 155,575
Claims priority, application Japan, June 27, 1970, 45/56240
Int. Cl. G11b *3/00, 3/74*
U.S. Cl. 179—100.4 ST **9 Claims**



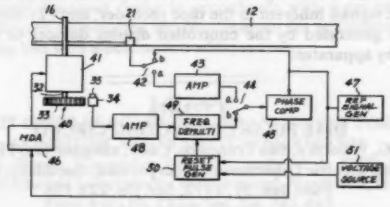
A cutting and recording system comprises a first reproducing magnetic head for reproducing a signal from a magnetic tape. A second reproducing magnetic head is disposed at a position preceding the first reproducing magnetic head in a running direction of the tape. Means are provided for detecting the level of the signal reproduced from the second reproducing head. Means are provided for angle modulating a carrier responsive to a signal reproduced from the first reproducing head. The level of this angle modulated carrier is controlled by the output of the signal from the second head. The output signal from the level controlling means and a direct wave signal are multiplexed. A cutting and recording of the multiplex signal is made on a record disc. The level of the carrier of the angle modulated wave is superposed upon the direct wave signal and cut and recorded on the same sound groove. This level is controlled in response to the level of the direct wave signal.

3,772,468

CAPSTAN PHASE MATCHING SYSTEM IN AN ELECTRONIC EDITING MODE FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS

Kazuo Tatsuguchi, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 1, 1972, Ser. No. 222,514
Claims priority, application Japan, Feb. 2, 1971, 46/3896
Int. Cl. G11b *27/32, 15/52*
U.S. Cl. 179—100.2 B **8 Claims**



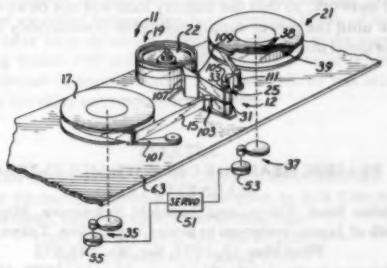
A capstan phase matching system for use in an electronic editing mode is applicable to a magnetic recording and reproducing apparatus having a capstan servo system. The rotation of the capstan is controlled responsive to a comparison of the phase of a control signal reproduced from a magnetic tape with the phase of a reference signal, during a reproduction mode. A similar comparison of the phase of a rotation signal detected responsive to the rotation of the capstan with the phase of the reference signal, controls rotation of the capstan during the electronic editing mode. The phases of the rotation of the capstan and the reference signal are matched by means an error output of the phase comparison. This capstan phase matching system comprises means for detecting the rotation signal at a sufficiently greater frequency than the frequency of the reference signal in response to the rotation of said capstan. The frequency of the detected rotation signal is divided to provide a frequency which is coincidental with that of the reference signal. The frequency dividing means is brought into an operative state, from an inoperative state, when a first reference signal appears after switching from the reproducing mode to the electronic editing mode.

3,772,469

FAST WIND TAPE TRANSPORT WITH TENSION CONTROL

Delmar R. Johnson, Barrington, Ill., assignor to Ampex Corporation, Redwood City, Calif.

Filed Dec. 10, 1971, Ser. No. 206,754
Int. Cl. G11b *15/44, 15/48, 15/43*
U.S. Cl. 179—100.2 T **9 Claims**



A controlled acceleration and a reduction in inertia and drag forces on a magnetic tape are achieved in a recording and/or reproducing apparatus during a fast wind operation by driving a capstan which is frictionally coupled to the tape. This is of particular value in an apparatus in which the capstan can not be readily decoupled from the tape. The capstan is driven at the slower velocity for recording or reproducing on the magnetic tape by a first drive means and the capstan is driven by a second drive means at a faster velocity for fast wind of the tape. Preferably, the second capstan drive means for the fast wind operation comprises a printed circuit motor having its rotor directly attached to the capstan; and means are provided for decoupling another motor for the first capstan drive means from driving relationship with the capstan during the fast wind drive of the tape. A servo means may be employed for controlling the supply reel drive means and the take-up reel drive means to limit the winding tensiyn in the coil of tape during a fast wind transport thereof.

3,772,470

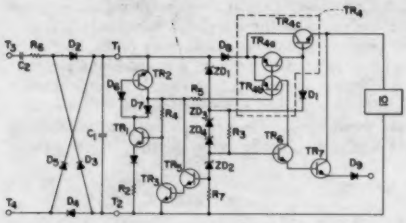
THRESHOLD CIRCUIT FOR TONE-RINGER

Michael C. J. Cowpland, and Richard C. Foss, both of Ottawa, Ontario, Canada, assignors to Microsystems International Limited, Montreal, Quebec, Canada

Filed Sept. 12, 1972, Ser. No. 288,410
Claims priority, application Canada, July 24, 1972, 147,766
Int. Cl. H04m *1/00*
U.S. Cl. 179—84 T **7 Claims**

The present invention relates to a threshold circuit for connection between the terminals of a power-supply and a load —

particularly a tone-ringer for use in a station-set of a telephone or like data-transmission system. The circuit is used to switch between a dummy load and a main load — such as a tone-ringer — wherein the dummy load normally takes lesser current draw than the main load. Therefore, for a given power-supply impedance, the voltage drop across the power-supply



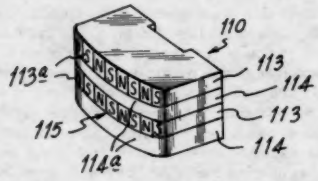
lines will increase and in conventional circuits this reduces the voltage level below the threshold, causing parasitic oscillation. The present invention eliminates this problem by providing hysteresis in the threshold voltage by use of a positive feedback network, so that the dummy load will not be switched in again until the power-supply voltage is considerably less than the original threshold voltage level.

3,772,471

ERASING HEAD FOR USE WITH MULTI-TRACK MAGNETIC TAPE

Tsutomu Imai, Tokyo, and Zenkichi Nakamura, Miyagi-ken, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 17, 1971, Ser. No. 143,873
Claims priority, application Japan, May 21, 1970, 45/43436
Int. Cl. G11b *5/14, 5/22*
U.S. Cl. 179—100.2 D **5 Claims**



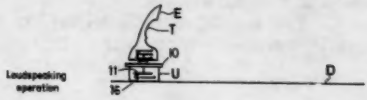
A magnetic head for erasing signals in a track that occupies only a portion of the width of a magnetic tape has a plurality of ferrite layers united, as by sintering, and being respectively magnetized and non-magnetic. Edge surfaces of the layers combine to define a surface of the head for contact with the tape, with such edge surfaces extending parallel to the direction of relative travel of the head and tape and with the edge surface of the magnetized ferrite layer having a width equivalent to that of the tape track from which signals are to be used. In addition to having a low coercive force, the non-magnetic ferrite preferably has a very high magnetic permeability for absorbing flux from the magnetized layer and preventing erasing of signals from regions of the tape adjacent the track contacted by the magnetized layer.

3,772,472

SWITCHING DEVICE FOR TELEPHONE INSTRUMENTS, ADAPTED TO ALTERNATELY BE USED AS LOWSPEAKING AND LOUDSPEAKING TELEPHONES

Knut Hugo Blomberg, Lokattskagen 39, Bromma, Sweden

Filed Feb. 16, 1971, Ser. No. 115,388
Claims priority, application Sweden, Feb. 18, 1970, 2086/70
Int. Cl. H04m *3/40*
U.S. Cl. 179—100 L **6 Claims**



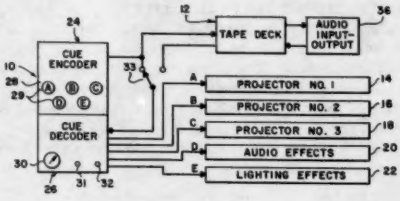
A switching device for telephone instruments for enabling said instrument to be used alternately as a lowspeaking telephone and as a loudspeaking telephone compriisng a base support unit for said telephone instrument, said base support unit being provided with switching contacts, said switching contacts being adapted to switch over the telephone from low-speaking to loudspeaking condition when the instrument is placed on to said support unit.

3,772,473

AUTOMATIC AUDIO-VISUAL PROGRAM CONTROL APPARATUS

Darryl V. Parham, 736 Newberry, Richardson, Tex.

Filed May 4, 1971, Ser. No. 140,097
Int. Cl. G03b *31/00;* **H03k** *7/08*
U.S. Cl. 179—100.2 S **21 Claims**



There is disclosed an audio-visual program control apparatus for use in multi-media presentation that employ various audio and visual display devices as auxiliary units. The control apparatus provides coded cue signals to a high fidelity tape recorder in a pulse position modulated mode. These recorded cue signals are thereafter played back and decoded for automatic simultaneous operation of a plurality of display devices that operate at predetermined times in step with an audio program recorded on the tape. The control apparatus eliminates the disruptive effects of (1) distortion of the multiplex signals inherent in the tape recorder, and (2) electronic noise generated by the controlled display devices or similar nearby apparatus.

3,772,474

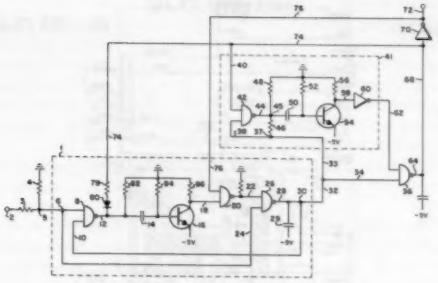
DIAL PULSE CORRECTING CIRCUIT

Otto G. Wisotzky, San Francisco, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 31, 1972, Ser. No. 222,175
Int. Cl. H04q *1/36*
U.S. Cl. 179—16 EA **7 Claims**

Circuitry is disclosed which will reshape uncorrected direct current input pulses so as to provide corrected output pulses

that have at least the desired minimum "break" and "make" intervals. Two logic timing circuits are interconnected and the input of the first timing circuit accepts the uncorrected dial pulse signal. This signal must be present for a minimum first predetermined time interval before an indication appears at the output of said first timer. A change in state at the output of



said first timer activates said second timer which insures that the changed condition will be maintained for a minimum period of time. After its return to its original state the first timing circuit will provide a minimum time interval before the circuit again changes state which is determined by the minimum first predetermined time interval.

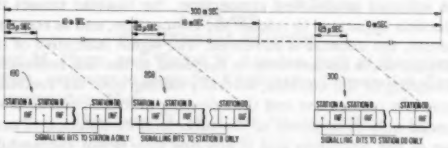
3,772,475

SATELLITE COMMUNICATIONS SYSTEM WITH SUPER FRAME FORMAT AND FRAME SEGMENTED SIGNALLING

Albert Loffreda, Torino, Italy, assignor to Communications Satellite Corporation, Washington, D.C.

Filed Aug. 28, 1972, Ser. No. 284,004

U.S. Cl. 179—15 BS **10 Claims**



In a TDMA (time division multiple access) satellite communications system, the individual frames, comprising bursts from all participating Earth stations, are grouped in a super frame which comprises a fixed plurality of individual frames. The beginning of each super frame is identified by including super frame marker codes within the station bursts during the first frame of the super frame. The super frame marker for each station is time synchronized with the super frame marker of a reference station. Destination signalling is time divided throughout the super frame in accordance with a pre-assignment, thereby eliminating the requirement for accompanying signalling bits with a destination address code.

3,772,476

DIGIT IMPULSE SCANNING ARRANGEMENT FOR A COMMUNICATION SWITCHING SYSTEM

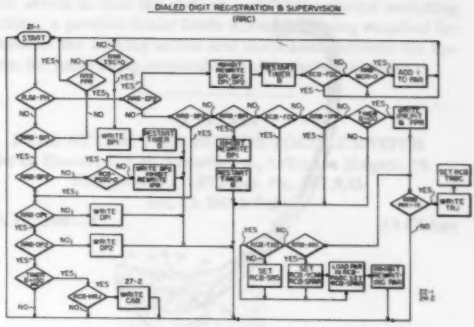
John F. Busch, Clarendon Hills, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 19, 1972, Ser. No. 245,463

Int. Cl. H04m *3/22*

U.S. Cl. 179—18 EB **7 Claims**

The validity of individual impulses in the dial pulse mode of signaling is determined, and both false breaks and false makes are rejected, in a system in which a pulse repeating relay in a digit receiver has its contacts connected to a scanner, which for nominal 10 pulse per second dial pulse signaling, samples the signal at the relay contacts once every 10 milliseconds. The common logic and memory circuits associated with the scanner are arranged to record the occurrence of two break



samples followed by two dead periods in succeeding cycles which are recorded independently of whether break or make samples have been detected, following which a make sample occurring within 100 milliseconds indicates a valid impulse. Short impulses of approximately 2 milliseconds or less are rejected by the relay not responding thereto.

3,772,477

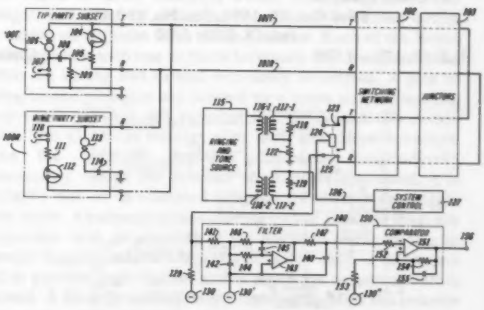
TELEPHONE DIAL PULSE DETECTION CIRCUIT

Lee Wise Richards, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 17, 1972, Ser. No. 272,294

Int. Cl. H04m *3/22*; H04q *1/36*

U.S. Cl. 179—16 EA **6 Claims**

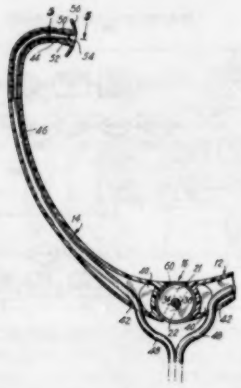


A telephone dial pulse detection circuit for reconstructing dial pulse signals in the presence of externally induced alternating current on an unbalanced line. The signals are initially applied to an active, low-pass, saturating filter where the alternating current component is substantially reduced leaving only the possibility of interference during the transition of the dial pulse signal from its most positive to its most negative level and vice versa. This possibility is eliminated by applying the filter output to a comparator circuit providing both an alternating and a direct current hysteresis.

3,772,478
STETHOSCOPE HEADSET

John P. McCabe, Miller Place, and Edwin Joscelyn, Commack, L. I., both of N.Y., assignors to Instrument Systems Corporation, Jericho, L. I., N.Y.

Filed Dec. 27, 1971, Ser. No. 212,262
Int. Cl. H04r 1/46, 5/00, 1/10
U.S. Cl. 179—1 ST 20 Claims

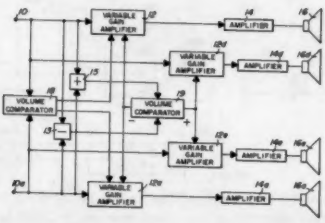


A stethoscope headset formed from a pair of arcuate housing arm members pivotably coupled at one end thereof. Each of the housing arm members is formed with a chamber adjacent said one end thereof dimensioned for receipt of an electro-acoustic transducer and a channel extending through each of said housing arm members providing communication between said chamber and the other end of said arm members. A sound conducting tube extends at least from said chamber through said channel and projects out of the other end of said arm members, an earplug being mounted on a projecting end of each of said sound conducting tubes.

3,772,479
GAIN MODIFIED MULTI-CHANNEL AUDIO SYSTEM

Francis H. Hilbert, Addison, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 19, 1971, Ser. No. 190,492
Int. Cl. H04r 5/00
U.S. Cl. 179—1 GQ 2 Claims

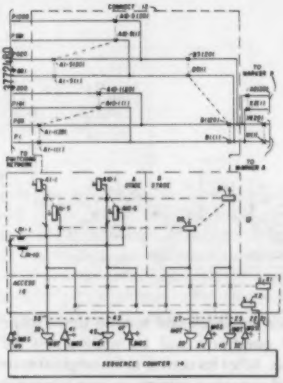


A stereo-effect enhancement system for increasing the apparent spatial separation in a multi-channel audio system includes variable gain amplifiers and comparator circuits which compare the amplitudes of the audio input signals and adjust the gain of the variable gain amplifiers in accordance with the ratio of the amplitudes of the audio input signals. Spatially expanded two channel stereo, pseudo three channel stereo, pseudo four channel stereo or automatic stereo balance control may be achieved by variously combining the audio signals from the enhancement system with the unmodified audio input signals.

3,772,480
SELF-TESTING SELECTION ARRANGEMENT FOR A COMMUNICATION SWITCHING SYSTEM

Angelo M. Valente, Schaumburg, and Robert W. Wolff, Lombard, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 2, 1972, Ser. No. 293,986
Int. Cl. H04m 3/24
U.S. Cl. 179—175.23 11 Claims

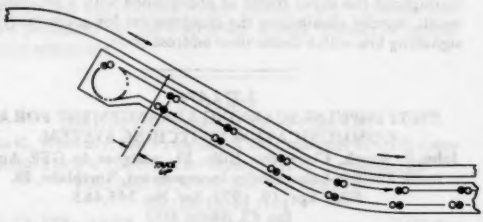


A self-testing selection arrangement which may be employed in a communication switching system having a switching network responsive to marker-generated control signals supplied over a series of control connections, includes a sequence counter for controlling a connection selection apparatus, which in the preferred embodiment is a relay tree apparatus. During the selection of a control selection, the selection apparatus responds to the sequence counter for generating a signal indicative of a selected set of connections, and test circuits responsive to the signal to advance the counter, which in turn causes the selection apparatus to establish a selected one of the control connections. During a subsequent release of the selected established connection, the counter causes the selection apparatus to release the connection, and in response thereto, the counter is advanced. The signal indicative of the selected set is de-activated in response to the last-mentioned advancing of the counter, whereby during both the establishment of a connection and the releasing of it the counter is advanced only in response to the successful completion of each step of the operation and if any one step is not successfully completed due to malfunctioning of the equipment or for any other reason, the counter is not advanced and and a maintenance request for service is initiated.

3,772,481
CONVEYORIZED ELECTRICAL CONTACT SYSTEMS

Joseph P. Saponaro, 24455 N. Cromwell Dr., Franklin, Mich.

Filed July 21, 1972, Ser. No. 274,076
Int. Cl. B60l 1/00
U.S. Cl. 191—6 6 Claims



A conveyorized electrical contact system for electrifying work piece carriers traveling on first conveyor, the system

providing for establishing as desired electrical contact with an electric rail and the carriers.

3,772,482

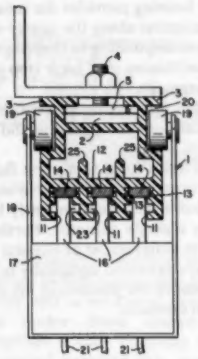
MULTIPLE TROLLEY CONDUCTOR UNIT

Donald R. Ross, Jr., Bridgeville, Pa., assignor to U-S Safety Trolley Corp., Pittsburgh, Pa.

Filed Mar. 4, 1971, Ser. No. 120,821

Int. Cl. H02g *5/04*

U.S. Cl. 191—23 **3 Claims**



A rigid rail formed of insulating material has a front side provided with parallel slots extending lengthwise thereof for receiving current pick-up members movable lengthwise of the rail. The opposite side walls of each slot are provided at their inner sides with a pair of exposed grooves extending lengthwise thereof. A rigid electrical conductor bar is mounted in each slot with its edges retained in a pair of grooves therein, whereby the bars are spaced inwardly of the open sides of the slots to avoid accidental contact with them.

3,772,483

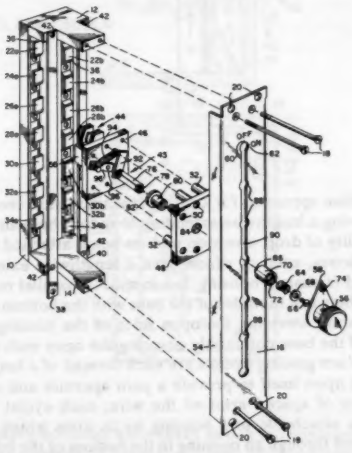
ELECTRICAL SWITCH

Daniel M. Flynn, and Walter W. Lunden, both of Hampden, Mass., assignors to Hampden Engineering Corporation, East Longmeadow, Mass.

Filed June 28, 1972, Ser. No. 266,998

Int. Cl. H01h *21/40, 9/20, 5/00*

U.S. Cl. 200—1 R **10 Claims**



An electrical switch for selectively connecting a plurality of power supplies with a circuit, and comprising a series of pairs of blade-like contacts for power supply inputs and a pair of elongated bus bars for circuit output. A slotted face plate carries a slide which in turn supports a rotary contact assembly comprising wipers in a U-shaped configuration. The wipers engage the blade-like contacts and the bus bar to connect a selected power supply to the circuit on rotation of the contact assembly. A positive turning action on a control knob is required to overcome a tension spring and effect a snap-action closing operation of the rotary and fixed contacts. Further, the knob serves to lock the slide at each of the several switching stations, a positive linear knob movement being required for release of the locking action and movement between the stations, the knob being inoperable to close between stations.

3,772,484

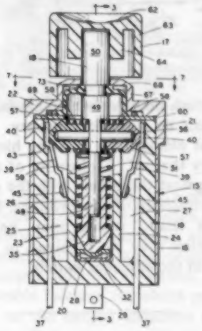
DUAL ACTING PUSH BUTTON TOGGLE SWITCH

John O. Roeser, 414 W. Victoria Ln., Arlington Heights, Ill.

Filed Sept. 11, 1972, Ser. No. 287,835

Int. Cl. H01h *9/00*

U.S. Cl. 200—4 **13 Claims**



A dual function electrical switch which can be operated either as a three position toggle switch or as a push button switch. The switch includes an elongated plunger-equipped actuator or operating shaft mounted within a casing, a toggle lever blade rockably mounted within the casing below the plunger, and a pair of switch levers pivotally mounted within the casing on opposite sides of the actuator. Each of the levers are engageable with one or more terminals which are mounted within the casing and extend outwardly therefrom. A pair of spring-biased plungers are carried by a cross shaft extending transversely through the actuator shaft and push the switch levers into electrical contact with their associated terminals when the actuator shaft is depressed longitudinally downwardly. When the actuator shaft is not depressed, it is pivotable out of its centered position to operate the toggle lever blade. Abutment means carried by the actuator shaft are cooperable with an opening in the top wall of the casing to prevent toggling action when the actuator shaft is depressed and to prevent push button action when the actuator shaft is pivoted. A flexible sealing boot hermetically seals the interior of the casing during both toggling and push button action.

3,772,485

MULTI-POSITION THUMBWHEEL SWITCH ASSEMBLY CYLINDRICALLY ARRANGED FIXED CONTACT RODS

John Louis Workings, Torrance, Calif., assignor to Information Appliances Corporation, Inglewood, Calif.

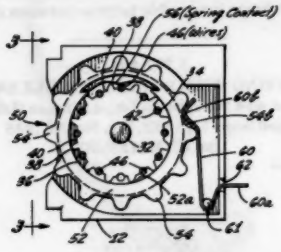
Filed Aug. 24, 1972, Ser. No. 283,326

Int. Cl. H01h *19/54*

U.S. Cl. 200—11 TW **16 Claims**

A stack of low-voltage thumbwheel multiposition switches may be produced from individual switches, each including a relatively flat dielectric housing defining a cavity within which

is formed a cylindrical island which may be integral with one wall of the housing. A plurality of elongated electrical conductors may be located in predetermined positions within niches in the periphery of the island. The island rotatably supports an annular conductive element having a resilient spring element which may selectively be placed into contact with each of the elongated conductors, depending upon the rotational position of the annular element. A serrated surface on the periphery of the annular element may be in constant contact with a spring-



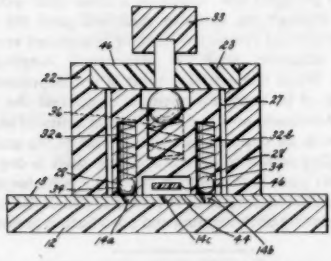
biased resilient brush member which extends out of the housing for attachment to suitable circuitry. An operator may rotate the annular element by pressing his finger against the serrated periphery thereof. A plurality of such switches may be stacked one against the other, with the elongated conductors extending through all of the switches, by means of an extension on each island which may be formed integral therewith and which may be received in a complementary bore in the island of the adjacent switch.

3,772,486

SIDE SELECTOR SWITCH WITH SEGMENTED TERMINALS AND COLLECTOR MEANS

Jerzy J. Wilentchik, 222 Lake Ave., Yonkers, N.Y.

Filed Jan. 17, 1972, Ser. No. 218,086
Int. Cl. H01h *15/00*
U.S. Cl. 200—16 C **18 Claims**



A relatively thin layer of conducting metal laminated to an insulating baseboard is divided into at least one array of uniformly sized and spaced electrically conducting contact segments insulated from each other by narrow separations extending the entire thickness of the metal down to the insulating base. At least one of the separations is contiguous to all the contact segments in the array. A provision is made for a spring contact member to be movable along the center line of the contiguous separation in physical engagement with the metal on either side thereof. In one embodiment of the invention, there are identical contact segments on either side of the contiguous separation, so that electrical connection is made between consecutive pairs of contacts as result of movement of the spring contact member. In another embodiment, there are electrical contact segments on one side of the contiguous separation but a continuous collector strip on the other side thereof, so that electrical connection is made from selected contact segments to the collector strip.

The spring member and the individual contact segments and collectors are enclosed in a housing. An actuator accessible from outside of the housing provides the means for displacing the spring contact member along the center of the contiguous separation in steps corresponding to the spacing of the contact segments and for positioning it at each step in the center of a respective contact segment.

Means are provided for making external electrical connection to the individual contact segments and to the collector strips.

This arrangement lends itself to a great flexibility as either single or multiple arrays can be provided in any one baseboard and can be controlled either independently by respective actuators or jointly by a single actuator. Furthermore, said arrays can be arrayed in either linear or circular fashion.

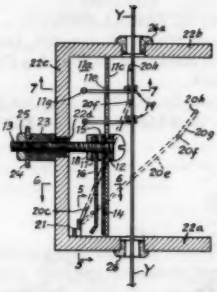
Indicator means are provided optionally in the housing and in the actuator to identify the position of the spring member in relation to individual contacts.

3,772,487

STOP MOTION APPARATUS FOR KNITTING MACHINES

Nathan Levin, 416 Highgate Dr., Trenton, N.J.

Filed Aug. 4, 1972, Ser. No. 277,871
Int. Cl. B65h *25/14*
U.S. Cl. 200—61.13 **10 Claims**



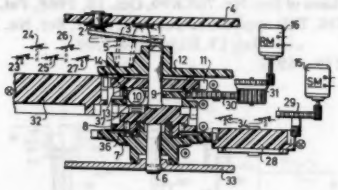
Stop motion apparatus for knitting machines, yarn creels, or the like having a lengthwise extending U-shaped base and having a plurality of drop wire stop motion boxes attached to the base, the boxes, each of which have a lengthwise extending open ended U-shaped housing, are in spaced parallel relation inside and between the sides of the base with the bottom of the base commonly covering the open sides of the housings and the sides of the base commonly covering the open ends of the housings. Yarn guiding eyelets are each formed of a length of wire coiled upon itself to provide a yarn aperture and an extending pair of spaced arms of the wire, each eyelet being removeably attachable to a housing by its arms which commonly extend through an opening in the bottom of the housing and which individually extend through openings in the side walls of the housing.

3,772,488

DEVICE FOR TEMPORARY CUTOFF OF ELECTRIC LOADS IN PROGRAM SWITCH MECHANISMS

Walter Holzer, and Bernd Mehlan, both of Meersburg, Germany, assignors to W. Holzer & Co. KG, Meersburg, Germany

Filed July 31, 1972, Ser. No. 276,382
Claims priority, application Germany, July 31, 1971, P 21 38 365.3
Int. Cl. H01h 43/10
U.S. Cl. 200—38 R 6 Claims



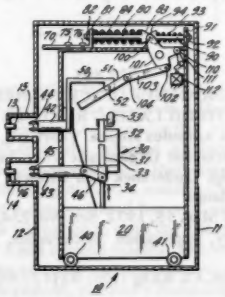
An apparatus de-energizes electric loads which are controlled by a program switch mechanism by de-coupling a program switch plate and a reversing switch plate which are driven from a motor drive source. The de-coupling mechanism comprises a claw coupling member having two guide tracks mounted between the reversing and program switch plates and two claw rings. Movement of the program switch plate by more than one succeeding program step causes axial movement of a claw ring moving on one of the guide tracks. An overrun coupling causes the program switch plate to be rotated at a faster rate by engagement with another motor drive source. Separation of the two claw rings causes the program switch plate to be driven at the faster rate and also causes axial movement of a shaft on which are mounted the program switch plate, the reversing switch plate, the claw coupling mechanism, and the overrun coupling mechanism so as to changeover a block contact to de-energize selected loads.

3,772,489

RACKING SAFETY DISCONNECT SWITCH FOR VACUUM CIRCUIT BREAKERS

George A. Wilson, Pineville, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed July 17, 1972, Ser. No. 272,429
Int. Cl. H01h 33/42
U.S. Cl. 200—50 AA 6 Claims



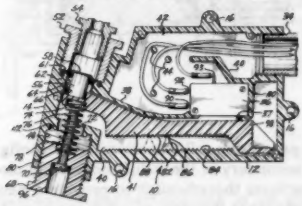
A spring-actuated disconnect switch is connected in series with the contacts of a truck-mounted vacuum interrupter and the main disconnect contacts of the circuit breaker. The disconnect switch is carried on the truck and the disconnect switch contacts are open and remain open when the main disconnects are racked closed. Racking the breaker to the connected position charges a disconnect switch spring operating mechanism which can be remotely discharged to close the disconnect switch after the breaker is racked to a connected position.

3,772,490

FORCE SENSING DEVICE WITH ADJUSTABLE MECHANICAL AMPLIFIER

Petur Thordarson, 13700 42nd Pl. N.E., Seattle, Wash.

Filed Apr. 27, 1972, Ser. No. 248,223
Int. Cl. H01h 35/34, 3/46
U.S. Cl. 200—153 H 3 Claims



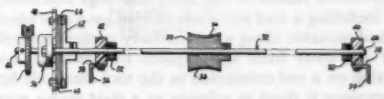
A force sensing device operable as a pressure switch or other triggering device or regulator includes a mechanical amplifier and deamplifier which translates motion created by changes in the applied force into larger or smaller movements for operating an output indicator or switch. An actuator arm mounted on a movable fulcrum translates motion induced by the applied force to the output indicator or switch, which responds to motion of the actuator arm in a manner determined by the position of the fulcrum. When employed as a pressure switch, for example, the shiftable fulcrum permits adjustment of the "deadband" of the switch, while other adjustments determine the position of the deadband on a pressure scale. The device is operable as a differential pressure switch or as a temperature regulator as well.

3,772,491

METAL ROLLER CONVEYOR FOR MICROWAVE OVENS

John E. Gerling, Palo Alto, Calif., assignor to Gerling Moore Inc., Palo Alto, Calif.

Filed Mar. 10, 1972, Ser. No. 233,537
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 12 Claims



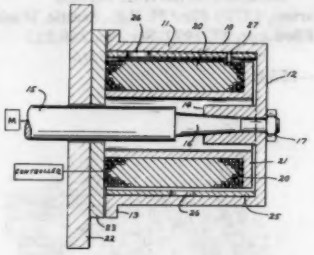
A roller type conveyor for microwave ovens in which the rollers are individually driven by suitable drive external to the oven. Each roller is supported on a strong metal shaft and is itself made of conductive metal. A microwave short is provided to prevent leakage in the region of the passageway in the oven wall through which the shaft extends. A dual speed embodiment of the invention is also disclosed as well as a complete system for the treatment of extruded foam polymers.

3,772,492

INDUCTION HEATER FOR FIBER PROCESSING ROLL

Morris H. Brogden, Donelson, Tenn., and Robert L. Geronime, Rosemount, Minn., assignors to Rosemount Inc., Minneapolis, Minn.

Filed July 13, 1971, Ser. No. 162,140
Int. Cl. H05b 5/00
U.S. Cl. 219—10.61 11 Claims



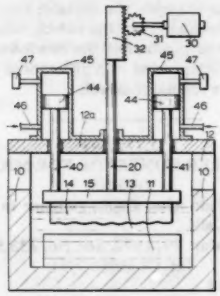
A fiber processing roll induction heater configuration which utilizes a secondary in the induction heating circuit which includes apertures therethrough to provide a desired temperature gradient along the rotating roll being heated.

3,772,493

ELECTRICAL DISCHARGE MACHINING APPARATUS

Oscar Iten, Savosa, Switzerland, assignor to R. C. F. S.p.A., Milan, Italy

Filed June 8, 1972, Ser. No. 261,028
Int. Cl. B23p 1/14
U.S. Cl. 219—69 G 2 Claims



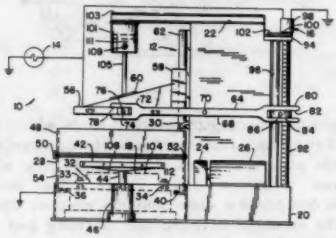
The invention relates to electrical discharge machining apparatus including a tool electrode carried on a tool electrode holder and movable along a substantially vertical control axis towards and away from a workpiece by positional control gear, acting on a rod connected to the tool electrode holder. The workpiece is fixed in relation to a rigid frame machine which includes a rigid gantry located above the workpiece. The gantry mounts bearing means through which the said rod extends for axial sliding movement along the control axis. At least two shafts are located symmetrically about the rod connecting the positional control gear and the tool electrode holder. Each shaft extends parallel to the control axis and each shaft is connected at its lower end to the tool electrode holder and extends upwardly therefrom through bearing means carried by the gantry. A pneumatic piston and cylinder assembly is associated with an upper region of each shaft and there are means supplying compressed pneumatic fluid to the piston and cylinder assemblies associated with the respective shafts to support the weight of the tool electrode and the tool electrode holder connected to the lower ends of the shafts. The cylinders are vented to atmosphere by way of relief valves arranged to open when pneumatic pressure in the cylinders exceeds a predetermined amount.

3,772,494

ELECTRICAL MACHINING STRUCTURE

Thomas J. O'Connor, 100 Morgan Rd., Ann Arbor, Mich.

Division of Ser. No. 768,699, Oct. 18, 1968, Pat. No. 3,590,210. This application June 14, 1971, Ser. No. 152,945
Int. Cl. B23p 1/14, 1/08
U.S. Cl. 219—69 G 3 Claims



A machine tool for electrical machining is disclosed which includes parallel linkage structure for moving an electrode toward and away from a workpiece. The parallel linkage structure, as disclosed, is driven by servo means to maintain a predetermined spark gap between an electrode secured to the machine tool structure and a workpiece supported thereby.

A fixed work table is provided as part of the machine tool structure in conjunction with a work tank having no bottom which tank is vertically movable. The fixed work table forms the bottom of the work tank with the tank in an upper position. On lowering of the tank fluid in the tank is rapidly drained into a lower storage tank from which it may be pumped through a filter after which it is stored in an upper storage for reuse. The work tank is provided with a removable upper portion to facilitate positioning of a workpiece in the fixed worktable.

A universal manifold is also provided whereby different fluid flow patterns may be provided from a single manifold to facilitate machining of workpieces requiring different flow patterns. The flow patterns of the universal manifold are readily selected by rotation of cylinders in the manifold.

3,772,495

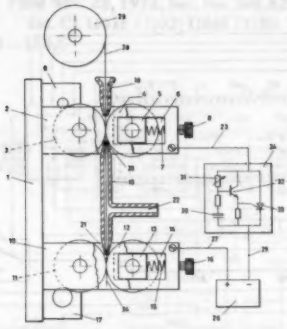
METHOD FOR MANUFACTURING NEEDLES FOR FIBRILLATING ROLLERS

Petrus Theodorus Antonius Klaase, Voorburg, Netherlands, assignor to Nederlandse Organisatie Voor Toegepost Natuurwetenschappelijk Onderzoek Ten Behoeve Von Nijverheid, Hague, Netherlands

Filed Mar. 15, 1972, Ser. No. 234,813
Claims priority, application Netherlands, Mar. 19, 1971, 7103724
Int. Cl. B23p 1/00; B21f 21/00
U.S. Cl. 219—68 6 Claims

A method and apparatus for the manufacture of metal needles, having torpedo-shaped or bullet-shaped points, for the use in fibrillating rollers. A metal wire is passed through a first pair of driven rollers and into a second pair of rollers driven at a greater speed. The two pairs of rollers are connected in an

electrical circuit. Upon entering into the second pair of rollers, the wire closes the circuit, is electrically heated and



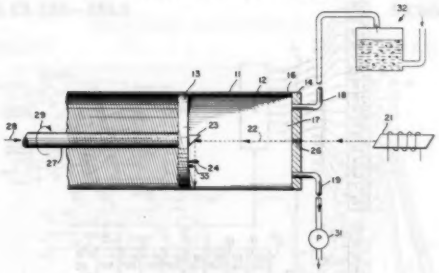
mechanically tensioned and breaks. The circuit comprises a time-delay relay, the extent of the time-delay being determinative for the shape of the needle points.

3,772,496

METHODS OF FORMING A CONDUCTIVE PATH USING AN OXYGEN PLASMA TO REDUCE REFLECTIVITY PRIOR TO LASER MACHINING

Alfred Joseph Harendza-Harinxma, Lawrenceville, N.J., assignor to Western Electric Company Incorporated, New York, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,388
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 LM **5 Claims**



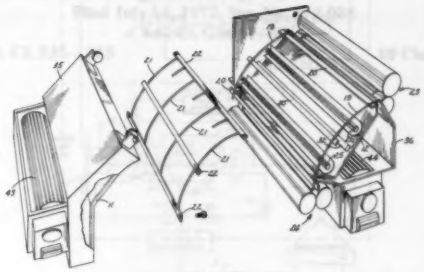
A layer of a conductive material, such as copper, is applied onto a dielectric surface. The structure is thereafter treated to render selected portions non-conductive by removal of the conductive layer from the selected portions. All remaining portions of the conductive material then constitute conductive paths on the underlying dielectric matrial. Treatment involves the impinging of a concentrated beam of energy, which may be provided by a laser source, onto the conductive material in the presence of a wet oxygen plasma. The wet oxygen plasma continually forms an oxide coating on the copper in the vicinity of beam impingement, markedly decreasing the reflectivity and thermal conductivity of the surface such that laser treatment becomes feasible. The laser beam vaporizes completely through the depth of the copper coating. The technique may be employed in forming helical conductor paths on the inner walls of sections of millimeter waveguide tubing.

3,772,497

FUSER FOR ELECTROSTATIC IMAGE

Donald R. Gray, Chesterland, and Richard W. Germuska, Cleveland, both of Ohio

Continuation of Ser. No. 807,052, March 13, 1969, abandoned. This application Mar. 3, 1971, Ser. No. 120,665
Int. Cl. G03g *13/20*
U.S. Cl. 219—216 **4 Claims**



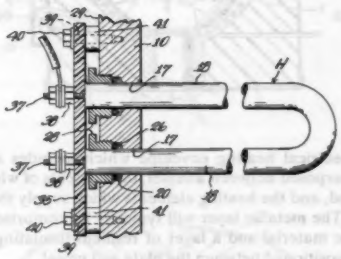
A high temperature chamber encased in an air flow to prevent heat transfer to surrounding areas. Heated by intense input to working temperature, then by alternate input just over and under the maintenance level. High level input during sheet processing regardless of cycle at time of sheet processing.

3,772,498

ELECTRIC HEATING ASSEMBLY

Sidney J. Temple, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed May 3, 1973, Ser. No. 356,740
Int. Cl. H05b *3/04*
U.S. Cl. 219—336 **9 Claims**

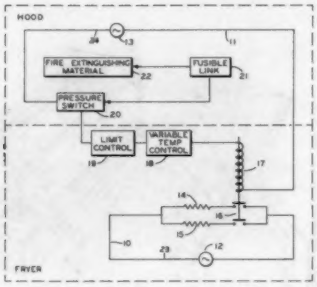


An electric heating assembly, wherein a sheathed heating element may be easily assembled with or disassembled from a support. Fluid-tight assembly is effected without the use of a flange fixed to the sheath, or the use of a compression fitting. The sheath extends through an opening in the support, and an O-ring surrounds the sheath and is disposed in a chamber formed by a counterbore of the opening. An insulating member has connection with the support and the terminal of the heating element to hold the sheath against axial movement.

3,772,499
FRYER CIRCUIT FOR USE WITH A HOOD CIRCUIT HAVING FIRE PROTECTION APPARATUS

Donald E. Fritzsche, Chicago Heights, Ill., assignor to General Electric Co., Indianapolis, Ind.

Filed Feb. 8, 1973, Ser. No. 330,592
Int. Cl. H05b 1/02
U.S. Cl. 219—490 **4 Claims**

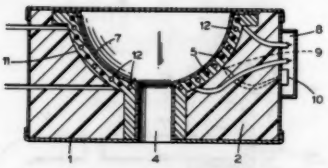


A deep fat fryer used under a hood having a fire protection device. Included in the fryer is a heater circuit having heater elements operating at one potential from a first input and a heater control circuit operating at either the same or another potential from a second input. The heaters are controlled by a contactor, the coil of which is in series with the second input, a variable temperature control, a limit control and a switching mechanism, usually a pressure switch located in the hood. The pressure switch is actuated by a fusible link, also located in the hood. The breaking of the fusible link also triggers the release of the fire extinguishing material.

3,772,500
ELECTRICAL HEATING ENVELOPES

Jacques P. Thibault, 24 Av. Theophile Gautier, Paris, France

Filed June 28, 1971, Ser. No. 157,551
Int. Cl. H05b 3/58
U.S. Cl. 219—535 **4 Claims**



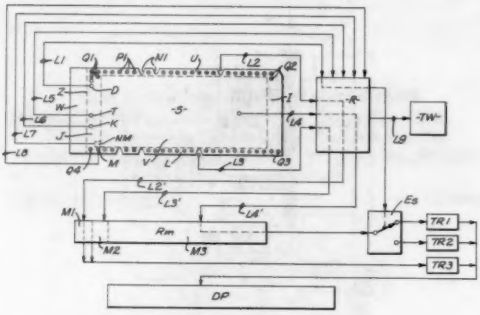
An electrical heating envelope which includes a metallic layer interposed between a vessel, the contents of which are to be heated, and the heating elements which supply the thermal energy. The metallic layer will typically be comprised of non-magnetic material and a layer of resilient insulating material may be positioned between the plate and vessel.

3,772,501
UNIVERSAL INFORMATION STORE, METHOD, AND APPARATUS

David E. Guthrie, La Mirada, and Arthur D. Swain, Alhambra, both of Calif., assignors to Saber Management Systems, Inc., Riverside, Calif.

Filed Dec. 21, 1970, Ser. No. 99,941
Int. Cl. G06k 7/00
U.S. Cl. 235—61.11 **6 Claims**

Information store comprising a pre-perforated and edge-notched device similar to a Hollerith information store, further contrived for mark-sensing of spatially-oriented mark-recorded information, with means for selectively utilizing a plurality of types of stored information retrieved from the device by the means and converted by the means into a single

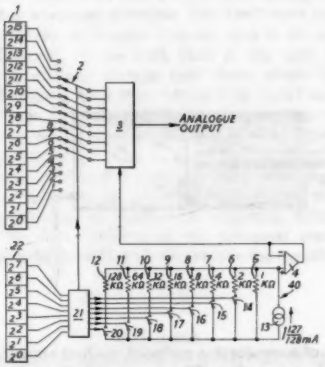


other type or form susceptible of direct use in any of a variety of known information-processing or information-utilizing means, and the mode of so storing and converting the information.

3,772,502
APPARATUS FOR OBTAINING A SUBSTANTIALLY CONTINUOUSLY SCALED ANALOGUE REPRESENTING THE AVERAGE VALUE OF A SEQUENCE OF BINARY WORDS

Stephen Raymond Hodge, and David Thompson Argent, both of Easthouses Rd., Newton Grange, Midlothian, Scotland

Filed Oct. 10, 1972, Ser. No. 295,876
Int. Cl. G06g 7/16; G06j 1/00
U.S. Cl. 235—150.5 **2 Claims**

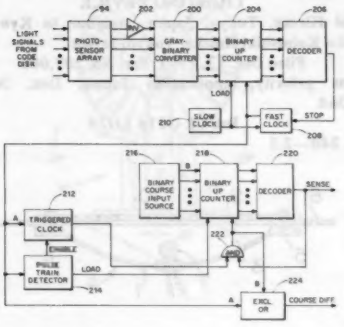


Apparatus for obtaining a substantially continuously scaled analogue representing the average value of a sequence of binary words, comprising an accumulator for storing the sequence, a digital to analogue converter, a multiplexer to supply the accumulator sum to the converter, a counter for registering the number of words supplied to the accumulator and logic circuit means driven by the counter and adapted to set the multiplexer in position for the supply to the converter of the quotient of the accumulator word sum and the number of words counted by the counter and to afford at the converter a reference voltage proportional to the quotient, the converter by multiplying the voltage reference and quotient providing the output which is an average word.

3,772,503
COURSE DIFFERENCE LOGIC FOR USE WITH DIGITAL MAGNETIC COMPASS

John T. Fowler, Winthrop, Mass., assignor to The Laitram Corporation, New Orleans, La.

Filed Nov. 22, 1972, Ser. No. 308,823
Int. Cl. G01c *17/02*; G06f *15/50*
U.S. Cl. 235—150.5 10 Claims

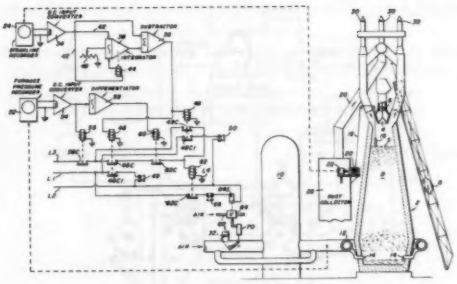


Logic circuitry for use with a digital compass for providing an output indication of the difference between an actual and an intended course. Digital signals provided by a digital compass are processed in conjunction with a digital signal representation of intended course position to provide an output signal representing course difference and which can be employed by display or automatic pilot apparatus.

3,772,504
APPARATUS FOR OPERATING A BLAST FURNACE

Harold W. DeBray, Monroeville Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 23, 1971, Ser. No. 211,446
Int. Cl. G06f *15/46*; C21b *7/00*
U.S. Cl. 235—151.1 5 Claims

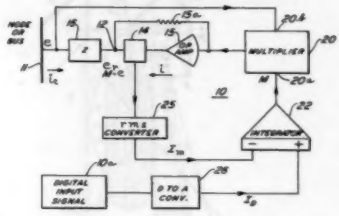


The apparatus includes means for comparing the rate of drop in the height of said burden with a predetermined normal rate of drop, means for indicating when the rate of drop in the burden height decreases a predetermined amount below normal, and means for indicating when the rate of drop in the burden height decreases a further predetermined amount below normal. Means are provided for determining when the blast pressure reaches a predetermined amount above normal and also for determining the rate of rise in the blast pressure. The pressure in the furnace is decreased when the blast pressure reaches the predetermined amount above normal, the rate of rise in the blast pressure reaches a predetermined value, and the rate of drop in the height of said burden decreases the first predetermined amount below normal, or when the blast pressure reaches the predetermined amount above normal and the rate of drop in the height of said burden decreases the second predetermined amount below normal.

3,772,505
SYSTEM AND METHOD FOR ON-LINE SIMULATION OF BULK POWER SYSTEM TRANSIENTS AT VERY HIGH SPEEDS

Edward M. Massell, Hightstown, N.J., assignor to Electronic Associates Inc., Long Branch, N.J.

Filed July 14, 1972, Ser. No. 272,086
Int. Cl. G06g *7/50*
U.S. Cl. 235—185 10 Claims

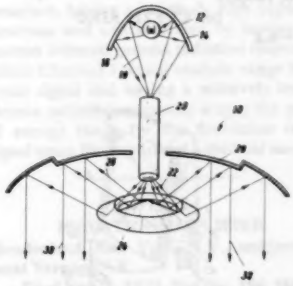


In a simulation system, there is provided a system for controlling the effective impedance connected to a node or bus whose instantaneous voltage value varies sinusoidally at a known frequency. That instantaneous voltage value is applied to one input of a multiplier with the multiplier output being connected through an amplifier and an impedance to the bus. A control signal voltage is applied to the other input of the multiplier for providing an instantaneous current from the bus to produce an effective load whose magnitude is adjustable by the control signal.

3,772,506
OPERATING LAMP PROVIDED WITH A LIGHT PIPE

Klaus M. Junginger, Rodenbach, Germany, assignor to Original Hanau Quarzlampen GmbH, Hanau, Germany

Filed July 6, 1972, Ser. No. 269,368
Claims priority, application Germany, July 7, 1971, P 21 33 719.9
Int. Cl. A61g *13/00*
U.S. Cl. 240—1.4 8 Claims



A lamp arrangement for medical operating rooms. Light from a point source is focused by a spheroidal reflector on the inlet end of a light pipe, which transmits it to a reflector arrangement below. In one embodiment a straight light pipe is employed with a stepped prismatic element to direct the light upward onto a stepped reflector. In an alternate embodiment

a curved light pipe is employed to transmit the light directly onto a parabolic reflector. The light rays leaving the final reflector in both embodiments are parallel and of uniform intensity.

3,772,507

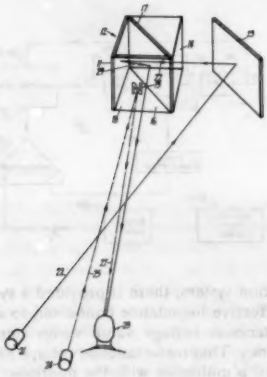
VISUAL DISPLAY METHOD AND APPARATUS

Brian Leslie Hills, Elwood, Victoria, Australia, assignor to Australian Road Research Board, Kew, Victoria, Australia

Filed Aug. 4, 1971, Ser. No. 168,992

Int. Cl. F21v *33/00*

U.S. Cl. 240—2 R **10 Claims**



Apparatus comprising a partially reflective mirror, a light source and a background for displaying articles against the background wherein the light source illuminates the article from the front and another light source illuminates the background, the article being viewed directly and the background being viewed as a reflection from the partially reflective mirror.

3,772,508

TOILET MIRROR

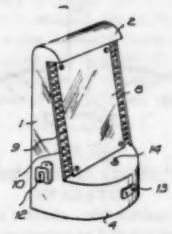
Francisco Solana Zapater; Pedro Solana Zapater, and Jose Solana Zapater, all of 581 Avenida Jose Antonia, Barcelona, Spai

Filed July 20, 1971, Ser. No. 164,320

Claims priority, application Spain, July 21, 1970, 160838; July 21, 1970, 160839

Int. Cl. F21v *33/00*

U.S. Cl. 240—4.2 **9 Claims**



A toilet mirror, such as a shaving mirror, includes a plain mirror is mounted on the front of a hollow casing. There are apertures in that front around the mirror which have deflecting fins for directing an air flow from inside the hollow casing toward a face situated before the mirror. The casing contains an electric fan and also has further apertures in another wall of the casing so that when driven the fan creates an air flow into the casing through the latter apertures and out through those beside the mirror to cool the face and reduce perspiration while shaving. A lamp, connecting plug for an electric razor, motor for the fan and a support for a razor may also be provided on the casing.

3,772,509

LIGHTING DEVICE

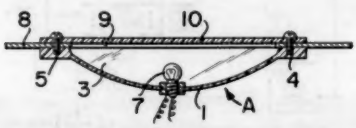
Kashichi Hirota, Tokyo, Japan, assignor to Kyowa Denki Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1971, Ser. No. 207,006

Claims priority, application Japan, Dec. 30, 1970, 45/129364

Int. Cl. G01d *11/28*

U.S. Cl. 240—2.1 **1 Claim**



A lighting device for elongate transparent scale plates, wherein a mirror is made up of a parabolic curved wall and flat walls attached to the upper and lower sides of said parabolic curved wall each at an angle thereto, and a light source is mounted on said parabolic curved wall, whereby the elongate transparent scale plate is uniformly lighted.

3,772,510

VIBRATION ISOLATORS FOR EVACUATED SCIENTIFIC INSTRUMENTS

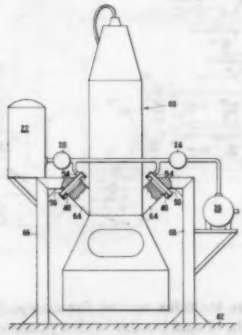
George Firmin Mertens, 24 Springhill Towers, Harlow, and Richard Stockbridge Page, 'Kaduna', St. Edmunds Ln., Great Dunmow, both of England

Filed June 22, 1972, Ser. No. 265,238

Claims priority, application Great Britain, June 23, 1971, 29529/71

Int. Cl. H01j *37/26*; G01n *23/00*

U.S. Cl. 250—311 **13 Claims**



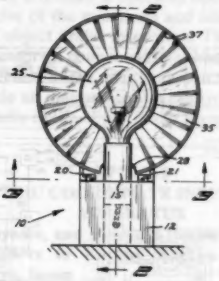
A vibration isolator is disclosed which is particularly effective to isolate low frequency vibrations. Basically, in a preferred form it is an elastically deformable container with a partial vacuum therein. The isolator is disposed between an object which is to be vibration isolated, and a fixed support. Several isolators can be used in parallel. In one form, the vibration isolator comprises an elastic bellows extending between two rigid members. Further improved performance can be obtained by coupling the vibration isolator to a vacuum reservoir.

3,772,511

REFLECTIVE ILLUSION DEVICE

Enrique G. Marban, 4350 W. Ford City Dr., Chicago, Ill.

Filed Dec. 29, 1971, Ser. No. 213,588
Int. Cl. A47g 33/16; F21p 1/02
U.S. Cl. 240—10 R 1 Claim



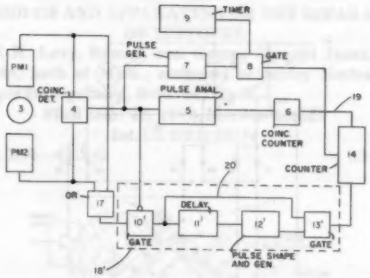
A substantially hemi-spherical reflective device formed as a shell having a light dispersing inner surface comprising a multiplicity of light reflecting ribs arranged to cause a repeated reflection of light rays within the shell and a flickering light source whereby rays of the light create the illusion that the entire interior of the shell is filled with moving lights.

3,772,512

LIQUID SCINTILLATION COINCIDENCE DETECTOR

Barton H. Laney, Deerfield, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed July 2, 1971, Ser. No. 159,389
Int. Cl. G01t 1/20
U.S. Cl. 250—366 9 Claims



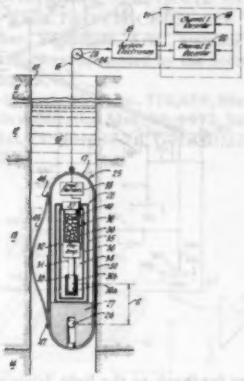
An improved liquid scintillation coincidence detector. Means are provided for determining the number of accidentally coincident electrical discharges, on a statistical basis, in the photodetectors in a liquid scintillation detector. These accidentally coincident discharges largely result from the phosphorescent qualities of the samples measured in the liquid scintillation counter. When accidental coincidences exceed an upper limit, which is dependent upon the rate of occurrence of total coincidences, the coincidence counter is disabled.

3,772,513

RADIOACTIVITY OIL-WATER WELL LOGGING UTILIZING NEUTRON SOURCE

Hugh E. Hall, Jr., Huntsville, Tex.; Alexander S. McKay, Calgary, Alberta, Canada, and Hans J. Paap, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 5, 1971, Ser. No. 121,458
Int. Cl. G01v 5/00
U.S. Cl. 250—262 39 Claims



Neutron-gamma radiation well logging methods and apparatus are disclosed for evaluating the oil-water contents of earth formations and which may be embodied in a logging system comprising a logging instrument to be passed through a bore hole which includes a neutron source for irradiating earth formations along the bore hole. Spaced a predetermined distance from the source along the longitudinal axis of the bore hole, there is provided a radiation detection unit comprising a proportional type radiation detector, such as a sodium iodide scintillation detector, having coupled thereto a multi-channel pulse height signal analyzer system for providing signals proportional to radiation within at least two separate predetermined energy ranges, one of which, referred to as the Channel 1 or formation reference (FR) signal, is indicative of hydrogen and is substantially insensitive to the chlorine content of the formation and the other of which, referred to as the Channel 2 or formation reference and chlorine (FR Cl) signal, is indicative of both hydrogen and chlorine in the adjacent formations. Surrounding the radiation detector, preferably around the outside of the logging instrument, there is provided a shield of a pre-selected material, such as samarium, having a relatively high capture cross-section for neutrons and characterized by having a significant thermal neutron induced gamma radiation response within the predetermined Channel 1 signal analysis range for the formation reference signal and having a relatively insignificant attendant gamma radiation response within the predetermined Channel 2 energy range for the formation reference plus chlorine signal upon the capture of a thermal neutron.

3,772,514

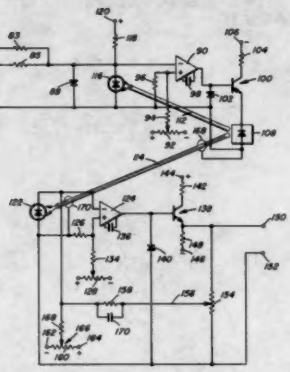
ISOLATION AMPLIFIER

John C. Sunderland, New York, N.Y., assignor to Capintec, Inc., Mount Vernon, N.Y.

Filed Nov. 8, 1971, Ser. No. 196,280
Int. Cl. G02f 1/28
U.S. Cl. 250—217 S 21 Claims

A DC isolation amplifier for transmitting DC analog voltages between two systems while maintaining DC and AC isolation therebetween. A current proportional to the DC input voltage is passed through a light-emitting diode whose light output is proportional to its input current. The output from

the light-emitting diode is fed in approximately equal amounts and via a light pipe array, to a pair of matched light sensitive diodes. The electrical output from one of the light sensitive



diodes provides feedback to the light driving circuitry, while the electrical output from the other is used to develop the signal output of the isolation amplifier.

3,772,515

APPARATUS FOR SPECTRAL ANALYSIS AND COUNTING OF PULSES GENERATED FROM RADIO ACTIVE DISINTEGRATIONS IN A RADIATION DETECTOR

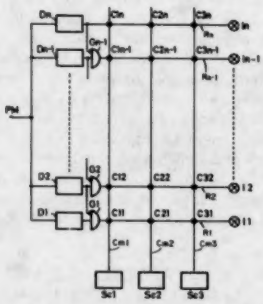
Erkki Juhani Soini, Turku, Finland, assignor to Wallac OY, Turkulo, Finland

Filed Mar. 28, 1972, Ser. No. 238,892

Claims priority, application Sweden, Apr. 16, 1971, 5005/71

Int. Cl. G01t *1/16*

U.S. Cl. 250—366 **3 Claims**



An apparatus for spectral analysis and counting of electrical pulses in an instrument for measuring radioactive disintegrations. The apparatus comprises a number of discriminators having preselected amplitude transmission ranges and optical indication means for indicating the spectral energy distribution of the pulses. Scalers are provided for counting the pulses within a number of these preselected amplitude ranges.

3,772,516

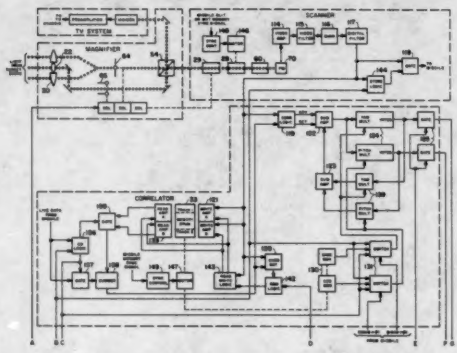
MAGNIFIER SCANNER TRACKER

Richard E. Roberts; George Lamar Harmon, both of Winter Park; Michael J. Colpack, and Burton J. Askowith, both of Orlando, all of Fla., assignors to Martin Marietta Corporation, New York, N.Y.

Filed Nov. 6, 1969, Ser. No. 874,538

Int. Cl. G01j *1/20*

U.S. Cl. 250—201 **17 Claims**



An electro mechanical optical device utilizing concentric multiple optical paths through which light indicative of a target scene can be displayed upon photosensitive devices, with means for processing voltage analogs of the light to provide positional information for controlling the positioning of the device, as well as means for deriving a plurality of scans indicative of the target scene, which scans can thereafter be used in other related devices.

3,772,517

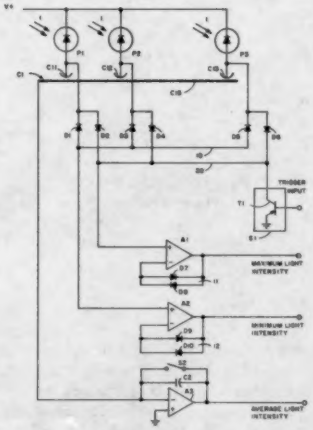
DETAILED PHOTOMETER

David A. Smith, Rt. 1, Box 19B, Willcox, Ark.

Filed May 8, 1972, Ser. No. 251,031

Int. Cl. G01j *1/00, 1/44;* H01j *39/12*

U.S. Cl. 250—209 **11 Claims**



A device is disclosed for determining the minimum, maximum and average luminescent density of an object under inspection. An array of light sensitive sensors are directed toward the object under inspection in an optical image plane

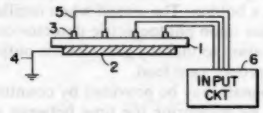
and leak current in proportion to the light radiated from the object. An impedance in series with each of the sensors develops a voltage. One terminal of each of two sets of gating diodes of opposite polarity are connected to the impedance-sensor node. The other terminal of each of the diodes of one polarity is connected to a first common terminal and the other terminals of each of the diodes of another polarity is connected to a second terminal. The voltage at the first and second common terminals is operated upon to provide output signals indicative of the maximum and minimum luminescent density of the object under inspection. The impedance in series with the sensors is connected to a third common terminal. The voltage present at the third common terminal is operated upon to provide an output signal indicative of the average luminescent density of the object under inspection.

3,772,518

PYROELECTRIC COORDINATE INPUT PROCESS AND APPARATUS

Naohiro Murayama, and Hideyuki Hashizume, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1972, Ser. No. 241,941
Claims priority, application Japan, Apr. 7, 1971, 46/21006
Int. Cl. G01j *5/02*
U.S. Cl. 250—211 R **14 Claims**



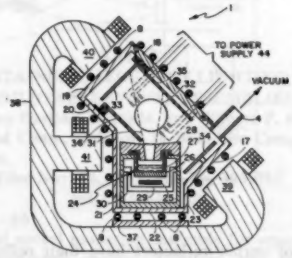
Process and apparatus for coordinate input of the irradiation position of an irradiating light by taking out a signal corresponding to the light irradiated onto the surface of a polymeric film, such as that of polyvinylidene fluoride, having pyroelectric properties in the form of a pyroelectric current from each of a plurality of electrodes provided on the surface of said film.

3,772,519

METHOD OF AND APPARATUS FOR THE SEPARATION OF ISOTOPES

Richard H. Levy, Boston, and George Sargent Janes, South Lincoln, both of Mass., assignors to Jersey Nuclear-Avco Isotopes Incorporated, Bellevue, Wash.

Filed Mar. 25, 1970, Ser. No. 25,605
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 G **53 Claims**



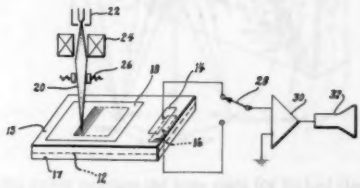
A method of and apparatus for the separation of an isotope from a working medium wherein a beam of atoms comprising the working medium may be generated in an oven and collimated with a suitable collimator. The collimated beam of atoms is directed through an evacuated region where two photon beams are applied to the beam and function respectively to excite and ionize a selected isotopic constituent of the atomic beam. The ionized isotope may then be removed from the atomic beam by electric or magnetic fields and collected on a collecting plate.

3,772,520

METHOD FOR THE INVESTIGATION OF THIN FILMS ON A SEMICONDUCTOR SUBSTRATE IN A SCANNING ELECTRON MICROSCOPE

Charles J. Varker, Scottsdale, Ariz., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 716,659, March 27, 1968, abandoned. This application Mar. 21, 1972, Ser. No. 236,595
Int. Cl. H01j *37/26*; G01n *23/22*
U.S. Cl. 250—307 **1 Claim**



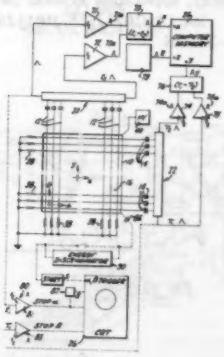
A method of investigating thin films where the film is mounted on semiconductor substrate containing a p-n junction and the film is scanned with an electron beam. The resulting current produced at the p-n junction by the penetrating electrons modulates the brightness of an associated display tube.

3,772,521

RADIATION CAMERA AND DELAY LINE READOUT

Victor Perez-Mendez, Berkeley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 30, 1971, Ser. No. 176,009
Int. Cl. H01j *39/28*
U.S. Cl. 250—385 R **9 Claims**



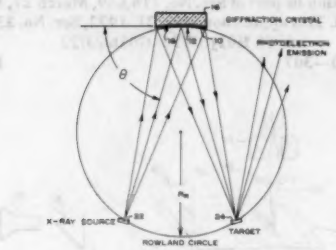
A proportional chamber having a plurality of output conductors carrying signals indicative of the location of an event detected within the chamber and using delay lines capacitatively coupled to said conductors for receiving signals through an intermediate portion of the side wall winding of the delay line. Delay times are measured to give a readout of the position and existence of the event.

3,772,522

CRYSTAL MONOCHROMATOR AND METHOD OF FABRICATING A DIFFRACTION CRYSTAL EMPLOYED THEREIN

Donald L. Hammond, Los Altos Hills, Calif.; Larry V. Knight, Provo, Utah; Henry Yoshida, San Jose, Calif., and Vasalie L. Peickii, deceased, late of San Mateo, Calif. (by Jeanette C. Peickii, executrix), assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 3,000, Jan. 15, 1970, abandoned.
This application Feb. 17, 1972, Ser. No. 226,577
Int. Cl. G01n *23/20*
U.S. Cl. 250—503 10 Claims



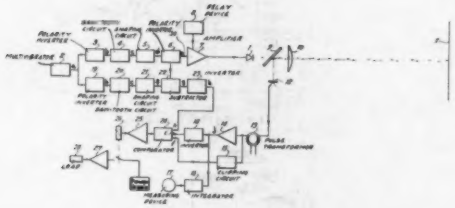
A crystalline quartz disc capable of diffracting X-radiation at a Bragg angle in the range from fifty to ninety degrees is formed with flat surfaces parallel to its atomic planes. This disc is forced against a spherical surface of a quartz substrate and brazed in place to provide a spherical diffraction crystal with a radius of curvature equal to the diameter of the Rowland circle. A monochromator is provided in which this spherical diffraction crystal monochromatically focuses X-radiation from a source at a point on the Rowland circle onto a target at a conjugate point on the Rowland circle.

3,772,523

METHOD AND APPARATUS FOR OPTICAL DETECTION

Michel Montanvert, Grenoble, and Jacques Jeymond, La Tronche, both of France, assignors to Cometa S.A., Montfleury, France

Filed Jan. 24, 1972, Ser. No. 220,007
Claims priority, application France, Jan. 1, 1971, 7103056
Int. Cl. G02f *1/28*; H01j *39/12*
U.S. Cl. 250—217 SS 6 Claims



Electro-optical methods and apparatus characterized by the use of an optical beam emitted by an electro-luminescent diode and reflected by a catadioptric member onto a photo-transistor.

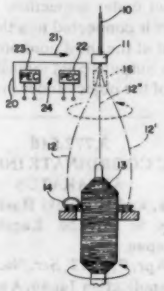
The diode is supplied with pulses from a pulse generator while the current produced by the photo-transistor 12 is transmitted through a transformer to a comparator which compares the pulse received to a reference pulse.

3,772,524

DIGITALIZED SPEED SENSITIVE MOVING STRAND DETECTION APPARATUS

Robert Stephen Erbstein, Coventry, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Jan. 3, 1972, Ser. No. 214,721
Int. Cl. D01h *13/16*; D02h *13/08*; D03d *45/12*
U.S. Cl. 250—561 9 Claims



Apparatus is provided for detecting the oscillation of a moving strand of yarn at a particular frequency as it is being wound about a bobbin. The strand when oscillating, impinges more than once upon photoelectric detector cells moved past a detection station to thereby give electric output pulses as an indication of proper yarn feed.

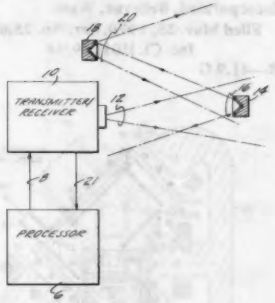
Indicator signals may be provided by counting the cell output pulses or by measuring the time between successive pulses. Multiple cells may be presented in sequence with two signal processing channels being used to provide higher reliability or detection speeds and to eliminate spurious signals produced by either a-c or d-c noise superimposed upon the photocells.

3,772,525

ATMOSPHERIC TRANSMISSOMETER

Raymond W. Goodwin, Westport, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed May 1, 1972, Ser. No. 249,375
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 R 7 Claims



A pair of corner reflectors have their reflective surfaces disposed to reflect light towards each other. A known percentage of light reflected from one reflector is reflected back towards the other reflector. A transmitter/receiver, disposed adjacent to one of the reflectors, transmits a light pulse towards the other reflector. Portions of two successive light pulses reflected from the other reflector are received by the transmitter/receiver. Apparatus responsive to the strengths of

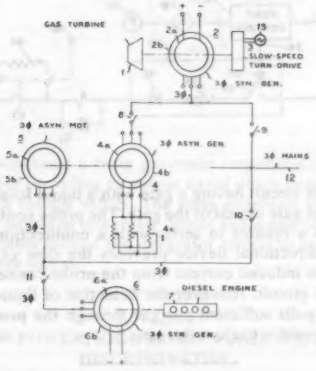
the two received light pulses provides a voltage related to the difference of the logarithms thereof, whereby a voltage is provided which is proportional to the atmospheric transmissibility of the medium between the reflectors.

3,772,526

APPARATUS FOR STARTING A GAS TURBINE WHICH IS SHAFT-COUPLED TO A SYNCHRONOUS GENERATOR AND TO A TURN-DRIVE WITH CLUTCH RELEASE

Edgar Alwers, Mannheim, Germany, assignor to Aktiengesellschaft Brown Boveri & Cie, Baden, Switzerland

Filed Nov. 15, 1971, Ser. No. 198,792
Int. Cl. H02p 9/04
U.S. Cl. 290—38 **3 Claims**



Apparatus for starting from standstill a gas turbine which is shaft coupled to a synchronous alternating current generator and bringing the turbine up to an intermediate "acceleration" speed where it becomes able to supply sufficient torque to further accelerate the generator up to its synchronous speed where it can be connected into the power network includes a turn-drive coupled to the turbine shaft for initially starting the turbine and generator to rotate and for also driving the turbine during the cooling off period, and a starting machine set consisting of an asynchronous drive motor shaft-coupled to an asynchronous generator. Power to drive the asynchronous motor is supplied either from the network if live or from an auxiliary power source consisting of a Diesel motor-generator set, and switching means are provided for interconnecting the stators of the asynchronous and synchronous generators such that power is transferred from the former to the latter, to supply the torque necessary to bring the turbine up to the "acceleration" speed.

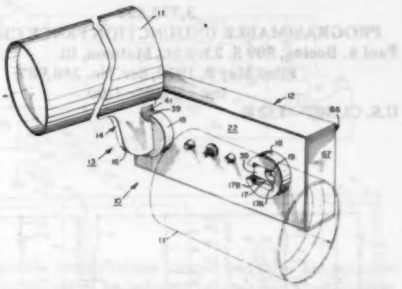
3,772,527

SELF-CONTAINED EMERGENCY LIGHTING UNITS & ADJUSTABLE SWIVEL ASSEMBLIES

Richard Henry Darling, Fairfield, and William P. Shine, Monroe, both of Conn., assignors to Dual-Lite Company, Newtown, Conn.

Filed Nov. 24, 1972, Ser. No. 309,085
Int. Cl. H02j 7/00
U.S. Cl. 307—66 **14 Claims**

A universal swivel mounting assembly for emergency exit spotlights, television camera monitors and like devices mounted on walls and ceilings is adapted to be aimed at a particular target area, adjustably positioned and locked in aimed condition. The swivel mounting incorporates a unique, universally adjustable swivel assembly characterized by mating trunnion surfaces, and its internal resilient frictional resistance to adjustment may be overcome by force manually applied during aiming, after which the unit may be locked in aimed condition. A hollow, shouldered T-bolt is telescopingly inserted within a hollow trunnion swivel socket, through an aperture in the socket and through an apertured and covcavely recessed trunnion collar; the T-bolt extends into the interior of a base plate mounting box, and through a resilient deformable friction washer into engagement with a friction nut. All of these parts may be adjusted to secure the assembly for aimed repositioning by overcoming the resilient frictional force supplied by the deformed resilient frication washer. A set-screw positioned in the collar engages the base plate for locked clamping of the assembly in any aimed position. The base plate is pivotally engagable with a slotted mounting box for convenient assembled installation, electrical wiring and adjustment of the device, which is capable of mounting aimable electronic and electro-optical devices on a wall or ceiling surface, providing universal adjustment and concealed inaccessibility as well as tamper-proof protection for as many as ten electrical conductors threaded through the hollow T-bolt into the interior of the base plate for connection with power, switching and other electrical systems.

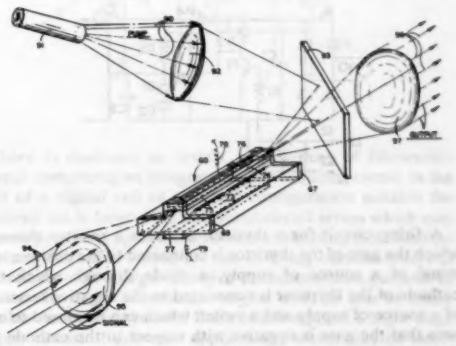


3,772,528

OPTICAL PARAMETRIC DEVICE

Dean B. Anderson, Whittier, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Division of Ser. No. 31,814, April 16, 1970, Pat. No. 3,600,613, which is a continuation of Ser. No. 605,443, Dec. 28, 1966, abandoned. This application Jan. 26, 1972, Ser. No. 221,005
Int. Cl. H03f 3/10
U.S. Cl. 307—88.3 **10 Claims**



An optical parametric device is described which may be used as an amplifier, oscillator, or frequency converter, and

which is operable in the infrared or visible spectral regions. The device utilizes a dielectric optical waveguide or tuned cavity, which structure may comprise the depletion layer of a semiconductor junction, the dielectric material of which exhibits nonlinear susceptibility. An intense, appropriately oriented, optical pump induces a non-linear electric polarization in the material of the dielectric structure. Traveling wave or discrete circuit parametric interaction occurs within the structure between the pump and an input signal. Under appropriate conditions, oscillation, amplification, and/or frequency conversion may be obtained.

3,772,529

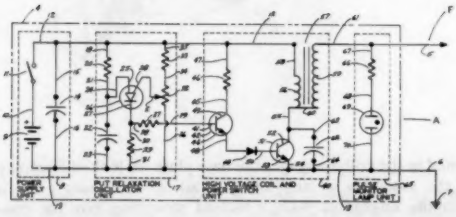
PROGRAMMABLE UNIJUNCTION FENCE CHARGER

Paul A. Boeing, 809 S. 23rd St., Mattoon, Ill.

Filed May 8, 1972, Ser. No. 250,987

Int. Cl. H05c *1/00*

U.S. Cl. 307—132 R **10 Claims**



A portable fence charger which comprises a relaxation oscillator having a programmable unijunction transistor for producing repetitive pulses, circuitry for amplifying and applying said pulses to a fence, and a repetitively flashing light to indicate proper function of the charger and fence.

3,772,530

THYRISTOR FIRING CIRCUIT

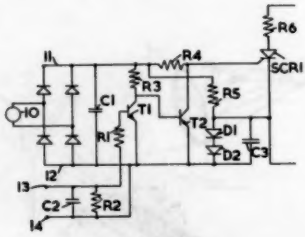
Walter Sinclair, Hemel Hempstead, England, assignor to Rotox Limited, Birmingham, England

Filed Mar. 1, 1972, Ser. No. 230,712

Claims priority, application Great Britain, Mar. 3, 1971, 5,959/71

Int. Cl. H03k *17/72*

U.S. Cl. 307—252 J **5 Claims**



A firing circuit for a thyristor includes a resistor through which the gate of the thyristor is connected to the positive terminal of a source of supply, a diode through which the cathode of the thyristor is connected to the negative terminal of a source of supply and a switch which can be closed to ensure that the gate is negative with respect to the cathode by the voltage drop across the diode and which can be opened to connect the gate to the positive terminal of the source of supply through the resistor the collapse of current in the resistor when the switch is opened together with the self inductive effect of the resistor applying a higher voltage than the supply voltage to the gate of the thyristor thereby to ensure that the thyristor is switched on rapidly.

3,772,531

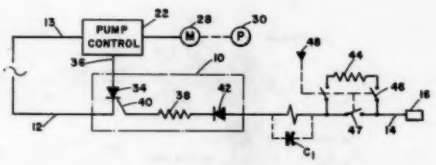
METHOD AND CONTROL CIRCUIT FOR LIQUID LEVEL CONTROL SYSTEMS

Robert M. Webb, Cornell, and Keith S. Parry, Granada Hills, both of Calif., assignors to T. H. Creears Corporation, Los Angeles, Calif.

Filed Nov. 22, 1971, Ser. No. 201,074

Int. Cl. H03k *17/72*

U.S. Cl. 307—252 N **11 Claims**



A control circuit having a gate with a liquid level detecting probe in the gate circuit of the gate. The probe controlled gate circuit has a resistor in series with a unidirectional device, which unidirectional device prevents the flow of stray line capacitance induced current from the probe connecting lines to the gate circuit. However the detection of liquid levels by the probe pulls sufficient current through the probe circuit, diode and resistor to close the gate.

3,772,532

APPARATUS FOR SIMULTANEOUS TRIGGERING OF SERIES-CONNECTED THYRISTORS

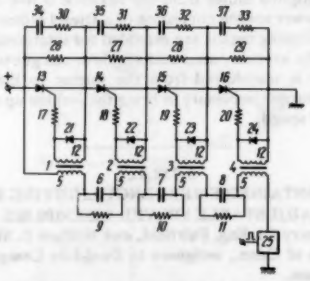
Jury Ivanovich Petrov, ulitsa Omskaya, 13, kv. 60; Boris Alexandrovich Budilov, 2 Murinsky prospekt, 3, kv. 30, and Anatoly Danilovich Zaitsev, Grazhdansky prospekt, 31, korpus 3, kv. 47, all of Leningrad, U.S.S.R.

Continuation of Ser. No. 107,711, Jan. 19, 1971, abandoned. This application Aug. 4, 1972, Ser. No. 278,121

Claims priority, application USSR, Jan. 26, 1970, 1394698

Int. Cl. H03k *17/72*

U.S. Cl. 306—252 L **3 Claims**



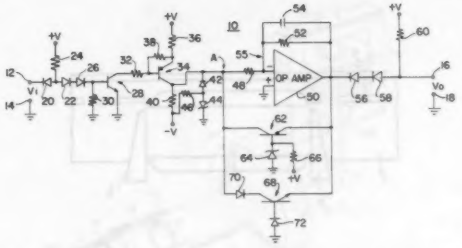
In an apparatus for simultaneous triggering of series-connected thyristors using pulse transformers, the primary windings of the pulse transformers are series-connected via blocking capacitors and in parallel with series-connected thyristors. The secondary windings of the same transformers are connected between the gate and cathode of the respective thyristors. One end of the network formed by the primary windings of the transformers is connected to the common anode of the group of thyristors, while the other end terminates in a control switch operating at the recurrence frequency of the signal triggering the thyristors.

3,772,533

TRAPEZOIDAL WAVEFORM GENERATOR CIRCUIT

Ronald L. Bruckner, Dayton, and Don P. Rex, Springboro, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed June 9, 1972, Ser. No. 261,272
Int. Cl. H03k 5/00
U.S. Cl. 307—261 6 Claims



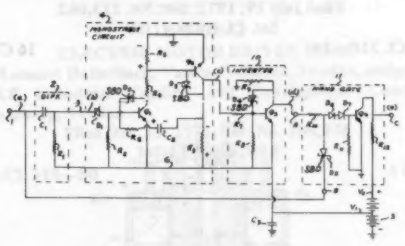
There is disclosed a ramp generator responsive to a pulse-type signal for providing an output signal which linearly ramps between two voltage values. The ramp generator includes an operational amplifier integrator circuit and a pair of feedback regulating paths around the integrator circuit to regulate the output voltage values.

3,772,534

LOW POWER, HIGH SPEED, PULSE WIDTH DISCRIMINATOR

Thomas L. Dellecave, and Rudolf R. Konegen, both of Rome, N.Y., assignors to the United States of America as represented by the Secretary of the Air Force

Filed Apr. 6, 1972, Ser. No. 241,569
Int. Cl. H03k 5/20
U.S. Cl. 307—234 3 Claims



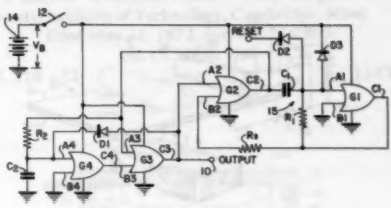
A pulse width discriminator which compares a received pulse with a reference pulse of specified width and produces an output pulse whenever the received pulse width is less than the width of the reference pulse. The reference pulse is generated by a monostable circuit triggered by the leading edge of the received pulse. The received pulse and the reference pulse are applied to two inputs of a logic gate circuit which produces the output pulse. To provide very low standby power requirements for battery operation, the transistor circuits constituting the discriminator are so designed that the transistor currents in the quiescent states of the circuits are practically zero. As part of the low power design, the monostable circuit comprises a complementary arrangement of two transistors both of which are nonconductive in the stable state. Delays in the discriminator are reduced to a minimum by the use of Schottky barrier diodes in shunt to the collector-base junctions of certain transistors.

3,772,535

ACCURATE MONOSTABLE MULTIVIBRATOR

William J. Tuten, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.

Continuation of Ser. No. 147,107, May 26, 1971, abandoned.
This application Nov. 13, 1972, Ser. No. 305,780
Int. Cl. H03k 3/26, 17/00
U.S. Cl. 307—273 16 Claims



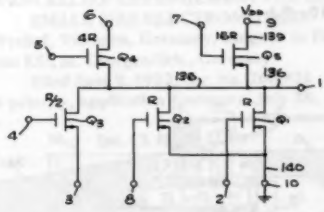
A monostable multivibrator circuit provides an accurate time delay by providing an output after charging a capacitor in opposite directions to generate a predetermined threshold voltage level sequentially, first as an increasing and second as a decreasing voltage. Except for the controlling R-C network, the circuit does not require temperature compensation to provide accuracy within ±10 percent in spite of wide variations in circuit parameters.

3,772,536

DIGITAL CELL FOR LARGE SCALE INTEGRATION

Norman J. Grannis, Palos Verdes, and Ted Winkler, Inglewood, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 669,091, Sept. 20, 1967, abandoned.
This application July 19, 1971, Ser. No. 164,080
Int. Cl. H01l 11/00
U.S. Cl. 307—304 5 Claims



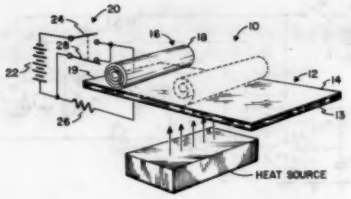
There is disclosed an article and method of fabrication thereof comprising an integrated semiconductor circuit in the form of a digital cell of standard configuration suitable for universal use in large scale integrated circuit arrays which may be mass produced up to the final interconnecting metallization step and thereafter stored for use in filling custom orders in accordance with a large variety of interconnection patterns to convert the array of standard digital cells to one of many possible functional systems. Each cell comprises a logic stage or gate circuit of universal applicability which may be interconnected with other similar cells in a large number of different ways to form completed circuits. The multiplicity of possible circuits are in general built by repetitive utilization of "nor" gates, "nand" gates, "transfer" gates and load devices.

3,772,537

ELECTROSTATICALLY ACTUATED DEVICE

Richard P. Clifford, Newport Beach, and James A. Moses, Torrance, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 27, 1972, Ser. No. 301,425
Int. Cl. H02n *1/00*
U.S. Cl. 310—6 5 Claims



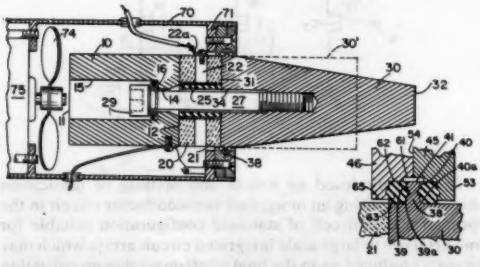
An electrostatic device having a relatively thin and flexible electrode strip, such as a metal coated plastic film or metal foil, which is secured to and normally curls away from an electrode member and is caused to electrostatically unfurl along the member by impressing a voltage between the member and strip. The device is capable of varied uses and is described in connection with its use as a thermal control louver and a light valve or shutter.

3,772,538

CENTER BOLT TYPE ACOUSTIC TRANSDUCER

Michael C. Supitilov, St. Charles, Ill., assignor to Du Kane Corporation, St. Charles, Ill.

Continuation of Ser. No. 199,892, Nov. 18, 1971, abandoned, which is a continuation of Ser. No. 34,220, May 4, 1970, abandoned. This application Jan. 8, 1973, Ser. No. 321,976
Int. Cl. H04r *17/00*
U.S. Cl. 310—9.1 5 Claims



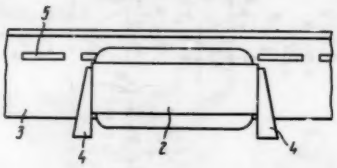
A center bolt type of acoustic transducer has means for mounting such transducer at the nodal plane. This means includes a flange integral with a transducer part and rigid clamping rings cooperating with such flange but acoustically isolated therefrom by suitable gaskets for support. The nodal plane is located at the flange.

3,772,539

LINEAR INDUCTION ELECTRIC MOTOR

Georgy Ignatievich Izhelya, Bulvar Lesi Ukrainki 24; Alexandr Grigorievich Shapovalenko, Ulitsa Zatonskogo 15/14; Vasily Ivanovich Shevchenko, Ulitsa Vernadskogo 75, and Vladimir Sergeevich Popkov, Ulitsa Dorogozhitskaya 21, all of Kiev, U.S.S.R.

Filed Feb. 16, 1972, Ser. No. 226,922
Int. Cl. H02k *41/02*
U.S. Cl. 310—13 5 Claims



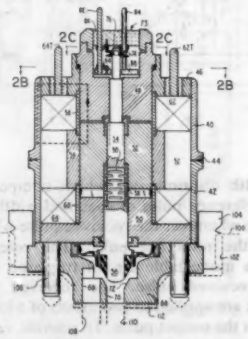
A linear electric induction motor has at least one stator or primary winding having a transverse winding axis and a predetermined pole pitch and a cooperating rotor or secondary member having a cross-section which is unsymmetrical about the transverse axis of the stator. The rotor or secondary member is provided with a pluraliry of apertures in the form of slots aligned in the direction of traction of the rotor, so as to obviate expulsive forces arising on account of asymmetry of rotor cross-section and adversely influencing the rotor member thereby causing undesirable friction and loss of power. The length of each of the slots is advantageously made longer than the winding pole pitch and the interspace between the slots is expediently made less than the stator pole pitch.

3,772,540

ELECTROMECHANICAL LATCHING ACTUATOR

Glendon M. Benson, Danville, Calif., assignor to New Process Industries, Inc., Minneapolis, Minn.

Filed July 19, 1972, Ser. No. 273,062
Int. Cl. H02k *41/00*
U.S. Cl. 310—14 16 Claims



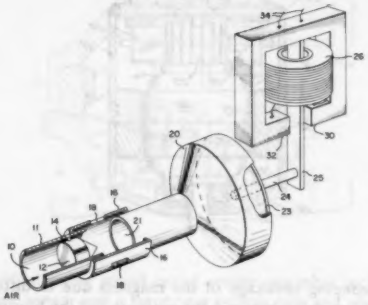
An electromechanical latching actuator for producing linear or rotary motion. The device includes one or more sets of permanent magnets and electric coils which annul and flux switch a magnetic field between adjacent magnetic poles thereby sequentially generating a force or torque that can be coupled to a suitable load. A fluid valve coupled to such actuator.

3,772,541

FLUIDIC GENERATOR

Carl J. Campagnuolo, Chevy Chase, Md., and Billy M. Horton, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 17, 1968, Ser. No. 745,949
Int. Cl. H02k 33/00
U.S. Cl. 310—15 3 Claims



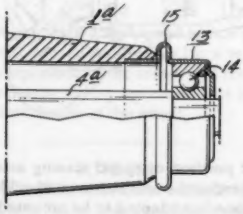
Air is caused to enter a nozzle in which a cylindrical plug is centrally located to form an annular orifice. The air discharging from the annular orifice impinges directly on the edge of a resonating cavity producing a multiple frequency edgetone. The column of air in the resonating cavity is thereby caused to vibrate at a frequency determined by the depth of the cavity. The changes in pressure within the resonating cavity cause a diaphragm forming an end of the cavity to pulsate inwardly and outwardly. A rod is attached to the diaphragm, and this rod transmits the vibrations of the diaphragm to a metallic reed which will then oscillate between a pair of magnetic pole pieces. The oscillations of the reed will induce an electro-motive force into a coil. The electromotive force induced in the coil may be made available to provide energy to operate an external electrical circuit.

3,772,542

ELECTRIC MOTOR DRIVEN TOOL

Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to SKF Industrial Trading and Development Company, Gateborg, Sweden

Filed Dec. 15, 1971, Ser. No. 208,278
Int. Cl. H02k 7/14
U.S. Cl. 310—50 1 Claim



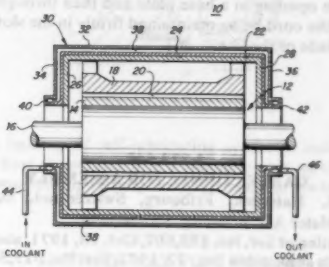
An electric motor-actuated tool, preferably a hand tool for use at high rotational speeds, comprising a motor-spindle unit mounted in a tool cover with an end portion provided with an opening, which unit comprises a stator and a rotor and a relatively long spindle projecting at one side from the rotor, characterized by that the spindle is mounted in bearings firstly in bearing supports which are arranged in connection to the rotor and fixed to the stator, and secondly in an end bearing device connected to the open end part of the cover near the tool carrying part of the spindle which projects out of the cover, whereby the motor-spindle unit is movably supported in the cover for positioning of the motor independently of the movements of the cover caused by deformations.

3,772,543

EDDY-CURRENT SHIELD SUPERCONDUCTING MACHINE

Herbert Horace Woodson, Austin, Tex., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 25, 1972, Ser. No. 256,803
Int. Cl. H02k 9/00
U.S. Cl. 310—52 12 Claims



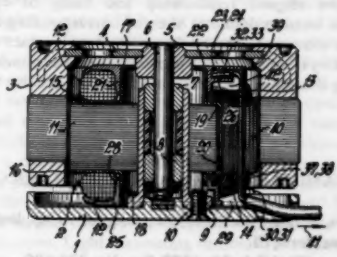
An eddy-current shield for containing the magnetic field in a cryogenic electrical machine having two relatively rotatable members, an armature and a cryogenic field winding, one of said members being an outer member and the other being an inner member surrounded by the outer member, comprising a symmetric cylindrical shell of electrically conductive material, extending at least co-extensively axially with the members and spaced from the outer of said members, and first and second end elements of electrically conductive material interconnected with the respective ends of the shell and extending radially inwardly toward the axis of the machine.

3,772,544

TRACTION RELIEF ARRANGEMENT FOR CORDS OF SMALL SIZE ELECTROMOTORS

Gunter Wrobel, Villingen, Germany, assignor to Firma Papst-Motorem KG, St. Georgen/Sch., Germany

Filed June 8, 1972, Ser. No. 260,821
Claims priority, application Germany, July 20, 1971, P 21 36 170.6
Int. Cl. H02k 11/00
U.S. Cl. 310—71 13 Claims



The motor has a stator including a magnetic structure formed with axially extending slots and stator coils extending

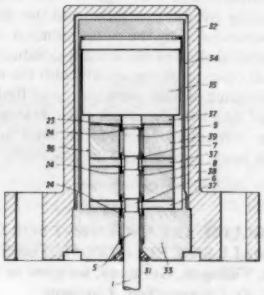
in the slots, and an external rotor rotatably surrounding the stator. The stator structure includes an element defining, at one axial end of the stator, uniformly angularly spaced cavities receiving the respective terminal ends of the stator coils. A supply cord extends through at least one of the slots from one axial end to the other and has the terminal ends of its conductors bent at at least 90° to the axis of the stator and inserted into the cavities, and connected therein to the terminal ends of said stator coils, by clamping plates. In one embodiment of the invention, the element is a winding cover plate having radially outwardly opening cavities. In another embodiment of the invention, the winding cover plate has a bendable flap which can be bent over the cord to prevent the terminal ends of the conductors being extracted from the cavities. In a third embodiment of the invention, the element is an insulating sleeve defining cavities extending axially, and the cord is bent around this sleeve with the terminal ends of its conductors extending into the cavities. In each case, the cord extends into the stator through an opening in a base plate and then through the axial slot, with the cord being maintained firmly in the slot by an insulating blade or the like.

3,772,545

CABLE CONNECTOR ASSEMBLY

Rudolf A. Hatschek, Fribourg, Switzerland, assignor to Vibro-Meter AG, Fribourg, Switzerland

Continuation of Ser. No. 193,607, Oct. 28, 1971, abandoned.
This application Dec. 22, 1972, Ser. No. 317,550
Int. Cl. H01r *17/18, 17/18, 17/18*
U.S. Cl. 310—71 **8 Claims**



A cable connector assembly for minerally insulated electric cables and comprising a cable plug disposed at the cable end and a socket adapted to receive the cable plug. The cable plug is composed of contact members and of insulators disposed in consecutive aligned relationship and being of cylindrical shape, the outside diameter thereof corresponding in size to the cable diameter. The socket comprises contact elements separated by insulating discs provided with a common passage extending therethrough which is adapted to receive the cable plug.

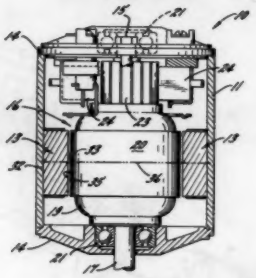
3,772,546

DYNAMOELECTRIC MACHINE WITH CERAMIC PERMANENT MAGNETS

William A. Means, Rockford, Ill., assignor to Applied Motors, Inc., Rockford, Ill.

Filed Feb. 28, 1972, Ser. No. 229,809
Int. Cl. H02k *21/26*
U.S. Cl. 310—154 **10 Claims**

The effective tensile strength of the ceramic permanent magnets of a DC motor is increased in directions angularly and radially of the motor housing by bonding thin steel strips to the axially facing ends of the magnets, the strips increasing the resistance of the magnets to breakage due to shock forces and bending stresses applied transaxially of the housing and transmitted through the housing to the magnets. In one embodiment, axially projecting flanges integral with the strips are bonded to the housing to anchor the magnets to the housing



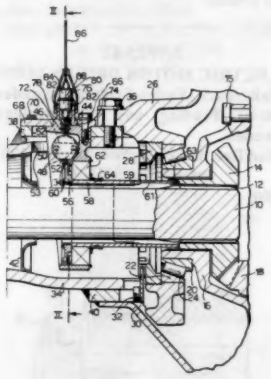
while reducing breakage of the magnets due to differential thermal expansion between the magnets and the housing. In a second embodiment, the magnets are anchored to the housing by connectors which are bonded to the housing and the axially extending side edges of the magnets to reduce breakage due to differential thermal expansion and to increase the effective tensile strength of the magnets in the axial direction.

3,772,547

ROTATION SENSING ASSEMBLY

Galileo Abate, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Sept. 14, 1971, Ser. No. 180,272
Claims priority, application Italy, Nov. 3, 1970, 70663 A/70
Int. Cl. H02k *19/24*
U.S. Cl. 310—168 **3 Claims**

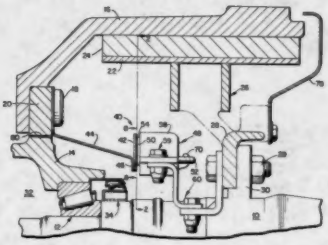


An angular position or speed sensing assembly has a magnetic sensor head and a toothed tone wheel both supported by one support member adapted to be mounted in an aperture in the axle housing of a vehicle. A ring-shaped extension of the support member protrudes into the axle housing and encircles the axle shaft. A tubular element, also encircling axle shaft, is rotatably carried within the extension and rigidly supports the tone wheel. A claw coupling loosely connects the tubular element to a side gear of the differential gear assembly of the vehicle for rotation therewith. The magnetic sensor head is carried by the support member in a cooperating position with the tone wheel.

3,772,548
WHEEL SPEED SENSOR

Richard C. Wroblewski, Warren, and Charles G. Wright, Detroit, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed June 30, 1972, Ser. No. 267,778
Int. Cl. H02k *19/20*
U.S. Cl. 310—168 **12 Claims**

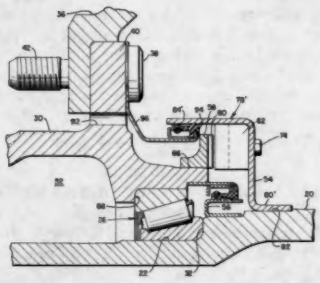


A self-adjusting wheel speed sensor assembly including a magnetic sensor and a rotor on a vehicle axle and wheel. The sensor and rotor are automatically adjusted to a predetermined relationship as the wheel is mounted on the axle and are maintained in that relationship during operation of the vehicle. The sensor is manufactured as a self-contained modular unit and the rotor is formed by a metal stamping operation.

3,772,549
WHEEL SPEED SENSOR

James C. Cumming, Pleasant Ridge, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 2, 1972, Ser. No. 249,659
Int. Cl. H02k *19/24*
U.S. Cl. 310—168 **4 Claims**



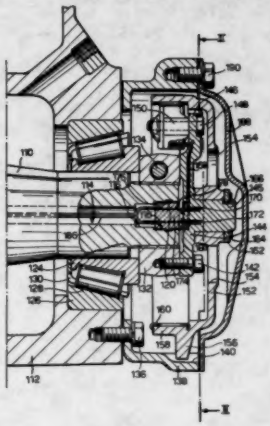
A system for mounting a wheel speed sensor mechanism including a magnetic sensor and a rotor on a vehicle axle and wheel to assure disposition of the sensor and rotor in precisely predetermined relation during operation and upon initial installation and reinstallation of the wheel.

3,772,550
WHEEL SPEED SENSOR FOR A BRAKING SYSTEM

Giovanni Anselmino, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed June 21, 1972, Ser. No. 265,039
Claims priority, application Italy, June 30, 1971, 69221 A/71; Dec. 14, 1971, 71084 A/71
Int. Cl. H02k *19/20*
U.S. Cl. 310—168 **4 Claims**

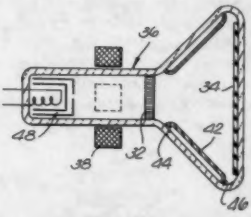
A speed or position detector for a vehicle wheel, for use with anti-skid braking systems, has a mounting which according to this invention consists of a cylindrical appendage at the outer end of a stub axle on which the wheel is supported, a toothed phonic wheel being rotatably mounted on the appendage by a low-roller friction bearing, for example a roller bearing or a bearing of self-lubricating synthetic material. The phonic wheel cooperates with a magnetic pick-up the cable of which passes through a longitudinal passage in the stub axle.



3,772,551
CATHODE RAY TUBE SYSTEM

John M. Grant, Granada Hills, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,073
Int. Cl. H01j *29/18*
U.S. Cl. 313—2 **3 Claims**



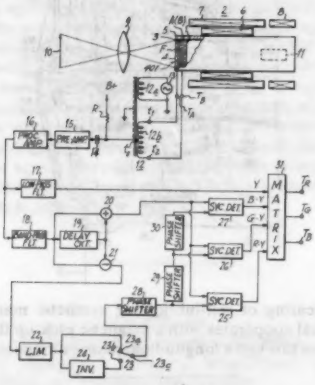
A cathode ray tube system having a source of electrons and a phosphor screen. A michrochannel plate having secondary emissive surfaces is positioned in the cathode ray tube so that the source of electrons is directed towards the microchannel plate. Output electrons from the microchannel plate are directed towards the reduced cross-sectional end of a magnification tube interposed between the microchannel plate and the phosphor screen which is at the enlarged end of the magnification tube. The resulting structure allows a reduced cross-sectional area microchannel plate to be used in the cathode ray tube system. Alternatively, the system may be manufactured of two envelopes with the first envelope containing the source of electrons which is directed to the microchannel plate. Electrons are then directed from the microchannel plate towards a phosphor screen adjacent thereto and light energy from the phosphor screen transmitted to a fiber optic structure at the end of the first envelope. A second fiber optic structure in the second envelope is adjacent the first fiber optic structure. Light emanating intothe fiber optic structure then appears at a photosensitive device adjacent the second fiber optic structure. The photosensitive device emits electrons into a magnitication tube in the second envelope which are directed towards a phosphor screen in the other end of the second envelope.

3,772,552

IMAGE PICKUP TUBE

Yasuharu Kubota, Fujisawa-shi, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. Nos. 72,593, Sept. 16, 1970, Pat. No. 3,668,020, and Ser. No. 176,553, Aug. 31, 1971. This application May 26, 1972, Ser. No. 257,411
Int. Cl. H01j 31/26
U.S. Cl. 313—65 R 3 Claims



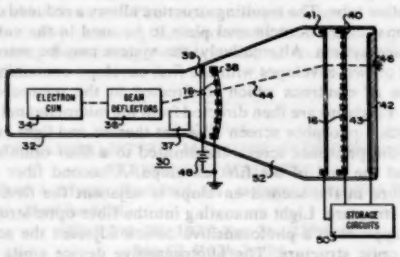
An image pickup tube, particularly for a color television camera, has an envelope closed, at one end, by a transparent faceplate which has a color filter on its inner surface made up of groups of stripe-shaped parallel filter regions passing respectively different wavelengths of light. A transparent glass plate is secured against the color filter and, at its surface remote from the filter, carries a pair of interleaved, comb-shaped electrodes having their respective elongated transparent element arranged alternately with a pitch equal to the pitch of the repeating cyclic order of the groups of color filter regions and extending parallel to the latter. A photoconductive layer covers at least the transparent elements of the comb-shaped electrodes, and output electrodes, preferably in the form of posts extending through the mentioned glass plate and faceplate, are respectively connected to the comb-shaped electrodes.

3,772,553

SECONDARY EMISSION STRUCTURE

Francis A. Balint, Colorado Springs, Colo.; William P. Kruger, Los Altos, Calif.; Milton E. Russell, Colorado Springs, and Lucien F. Trueb, Denver, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 75,809, Sept. 28, 1970, abandoned. This application June 19, 1972, Ser. No. 263,834
Int. Cl. H01j 31/18
U.S. Cl. 313—68 R 3 Claims



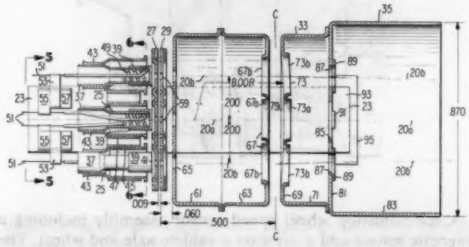
A grid is coated with a dielectric material which has good secondary emission characteristics and the coated grid is mounted in a cathode ray tube along with a collector electrode. The secondary emission structure is used as an expansion lens or a storage mesh in a storage type cathode ray tube.

3,772,554

IN-LINE ELECTRON GUN

Richard Henry Hughes, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,758
Int. Cl. H01j 29/50
U.S. Cl. 313—69 C 11 Claims



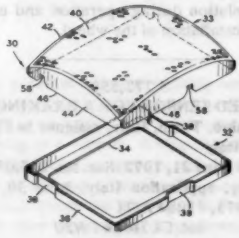
The three co-planar beams of an in-line gun are converged near the screen of a cathode ray tube by means of two plate-like grids transverse to the beam paths and having corresponding apertures for the three beams. The three beam apertures of the first grid are aligned with the three beam paths. The two outer beam apertures of the second grid are offset outwardly relative to the beam paths to produce the desired convergence. The three sets of apertures also provide separate focusing fields for the three beams. The second plate-like grid is formed with a barrel shape, concave toward the first grid, to minimize elliptical distortion of beam spots on the screen due to crowding of the adjacent focusing fields. Each of the two outer beams is partially shielded from the magnetic flux of the deflecting yoke by means of a magnetic ring surrounding the beam path in the deflection zone, to equalize the size of the rasters scanned on the screen by the middle and outer beams. Other magnetic pieces are positioned on opposite sides of the path of the middle beam, to enhance one deflection field while reducing the transverse deflection field for that beam.

3,772,555

COLOR CATHODE RAY TUBE OF THE SHADOW MASK VARIETY

Leffler H. McKee, Seneca Falls, and Henry W. Roeber, Waterloo, both of N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,516
Int. Cl. H01j 29/46
U.S. Cl. 313—85 S 3 Claims



A shadow mask for a color cathode ray tube has a rectangular, relatively rigid, lightweight frame with an inwardly extend-

ing flange having attached thereto a circumferential side wall having a constant height. A foraminated relatively fragile face with a solid skirt portion having a portion thereof formed to provide a rectangular peripheral wall with four sides extending from the face is attached to the frame. Attachment is by means of welds between the peripheral skirt wall and the side wall of the frame. The four sides of the peripheral wall have a planar termination whereby the height of any one of the side walls is continuously variable when measured from adjacent points of the termination to the curved face. This construction provides a shadow mask having increased tolerance to permanent deformation caused by heat generated by impingement of an electron beam in a confined area for extended periods of time.

3,772,556

IMPROVEMENTS RELATING TO ELECTROLUMINESCENT LIGHT SOURCES

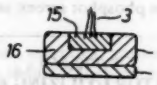
William George Williams, Southall, England, assignor to EMI Limited, Hayes, Middlesex, England

Filed Jan. 20, 1972, Ser. No. 219,475

Claims priority, application Great Britain, Jan. 26, 1971, 3,182/71; Apr. 15, 1971, 9,551/71

Int. Cl. H05b *33/02*

U.S. Cl. 313—108 A **7 Claims**



Electrodes for injecting charge into electrically insulating materials, especially electroluminescent materials, are described. The electrodes are filamentary in structure ("filamentary" being defined so as to embrace needle-like and sharp edged members as well as fibrous members), and formed of or coated with carbon. Electroluminescent devices incorporating such electrodes are also described.

3,772,557

ELECTRIC DISCHARGE LAMPS

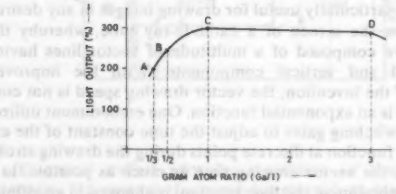
Yasuo Yoshida, Urawa; Katsuhiro Kawai, Kita-Adachi-gun, Saitama, and Hiroshi Namiki, Omiya, all of Japan, assignors to Iwasaki Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1972, Ser. No. 252,229

Claims priority, application Japan, May 11, 1971, 46/30850

Int. Cl. H01j *61/18*

U.S. Cl. 313—229 **2 Claims**



Electric discharge lamps having the fill of mercury and an innert-gas such as argon added with gallium and a halide such as iodine and bromine to make the light output rich in the vicinity of 400 mu wave length band to be adapted particularly for the light source for blueprinting, photolithography, in which gallium is added far excessive to the chemical equivalence for the gallium halide so that the gram-atom number ratio of gallium to the halide ranges from 0.5 to 3.0, whereby the satisfactory light output of the prior art type mercury lamp having the additive fill of gallium halide is kept and the disadvantage thereof, namely inevitably higher starting and reigniting voltages can be avoided.

3,772,558

ELECTRON GUN ELECTRODE HOLDER

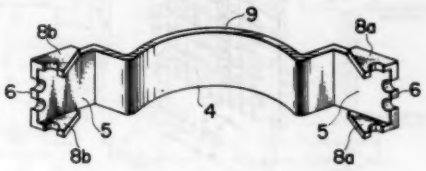
Tomohiro Nagao, deceased, late of Yokohama, Japan (by Iwao Nagao, executor), assignor to Hitachi Ltd., Tokyo, Japan

Filed Dec. 29, 1971, Ser. No. 213,657

Claims priority, application Japan, Dec. 30, 1970, 45/137259

Int. Cl. H01j *1/88, 11/42*

U.S. Cl. 313—256 **4 Claims**



An electron gun electrode holder supported by insulating support members disposed within the neck of a cathode-ray tube and supporting the electrode of an electron gun within said neck, which electrode holder has its and portions se cured to the associated insulating support members and provided with projections to prevent its relative axial displacement relative to said insulating support members, thus preventing its loosening in direction both parallel and perpendicular to the tube axis to prevent the electron gun electrodes from getting out of alignment with one another so as to prevent degradation of the reproduced picture quality.

3,772,559

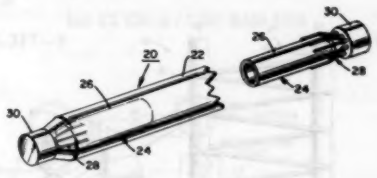
ELECTRODE MOUNTS FOR COLD CATHODE LAMPS

James A. Schoke, 4 Cah Dr., Westport, Conn.

Filed Sept. 7, 1971, Ser. No. 178,209

Int. Cl. H01j *61/04*

U.S. Cl. 313—269 **8 Claims**



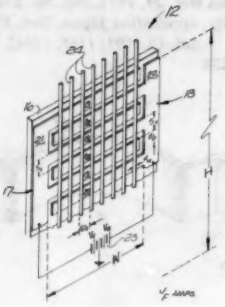
Peripherally welding straight contact pins at the base of the electrodes in a cold cathode lamp provides an electrode mount and lamp structure capable of withstanding and remaining functional when subjected to high vibratory and/or shock conditions. While the preferred electrode mount employs straight contact pins welded to the base of the electrode and passed through a cooperating enveloping glass tube, it has been found that an inexpensive electrode mount can be provided by bending commercially available miniature electron tube contact pin assemblies to peripherally surround the electrode and then welding the contact pins to the base of a hollow electrode. Commercially available glass tubes are then sealed to the contact pin assemblies. While any bending of the supporting contact pins is not desired, the inexpensive electrode mount, although not the most preferred form, is still capable of performing under high vibratory and shock conditions.

3,772,560

THERMIONIC CATHODE

Richard Kasper Orthuber, Sepulveda, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,595
Int. Cl. H01j 1/30, 1/16, 17/06
U.S. Cl. 313—310 **9 Claims**



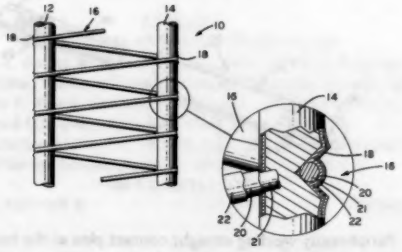
A thermoinic cathode including two conductive metal support-leads and a plurality of parallel segments of thoriated tungsten wire for producing an electron stream of a very large cross sectional area required, e.g., in tubes utilizing channel-type electron multipliers. The support-leads are formed in the shape of a comb with spaced interleaved teeth. Each of the wire segments extends perpendicularly over and is conductively bonded to each tooth.

3,772,561

ELECTRON DISCHARGE DEVICE GRID HAVING ENHANCED THERMAL CONDUCTIVITY AND REDUCED SECONDARY EMISSION CHARACTERISTICS

Donald R. Kerstetter, Emporium, Pa., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Division of Ser. No. 31,139, April 23, 1970, Pat. No. 3,632,485. This application Oct. 4, 1971, Ser. No. 186,086
Int. Cl. H01j 19/38
U.S. Cl. 313—350 **3 Claims**



Thermal conductivity is increased and secondary emission reduced by plating a preliminarily formed grid with copper and then overplating with gold or silver.

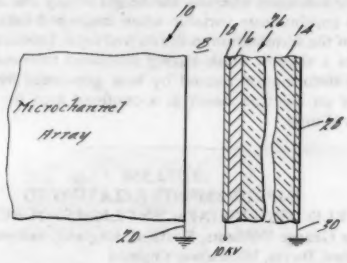
3,772,562

PHOSPHOR SCREEN ASSEMBLY

George W. Goodrich, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Teterboro, N.J.

Filed July 12, 1968, Ser. No. 744,360
Int. Cl. H01j 31/26
U.S. Cl. 315—10 **7 Claims**

An image intensifier tube including a source of electrons, an electron amplifier and a phosphor screen assembly, the tube including connecting a source of electrical potential across the electron amplifier and the screen assembly to create an electric field therebetween to accelerate the electron flow between the electron amplifier and the screen assembly. The phosphor screen assembly includes a metal film forming a plate and a phosphor film for translating the electron flow to a



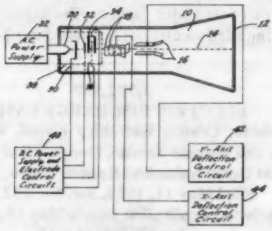
viewable image. Both films are attached to a glass substrate forming the viewing surface. An additional metallic film is attached to the opposite side of the glass to that supporting the phosphor screen for balancing the effect of the electric field on the phosphor screen assembly, thus minimizing flaking of certain portions of the phosphor screen assembly.

3,772,563

VECTOR GENERATOR UTILIZING AN EXPONENTIAL ANALOGUE OUTPUT SIGNAL

Ralph D. Hasenbalg, Canoga Park, Calif., assignor to Vector General Inc., Canoga Park, Calif.

Continuation-in-part of Ser. No. 95,515, Dec. 7, 1970, abandoned. This application Nov. 9, 1972, Ser. No. 304,942
U.S. Cl. 315—23 **9 Claims**



An improved vector generating electrical system is provided for forming the mathematical representation of a vector. The system is particularly useful for drawing images in any desired pattern on the screen of a cathode-ray tube, whereby the images are composed of a multitude of vector lines having horizontal and vertical components. With the improved system of the invention, the vector drawing speed is not constant, but is an exponential function. One embodiment utilizes suitable switching gates to adjust the time constant of the exponential function at discrete points during the drawing stroke to reduce the vector drawing time as much as possible. In a second embodiment the time constant is changed in an infinite resolution system.

3,772,564

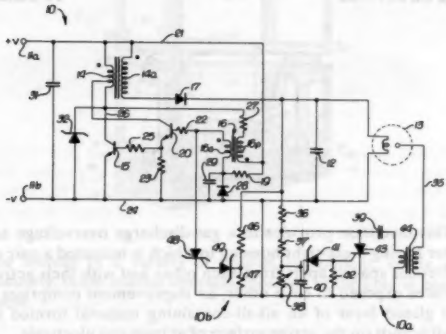
LAMP FLASHING CIRCUIT

Morton B. Leskin, 4046 Cody Rd., Sherman Oaks, Calif.

Filed May 25, 1972, Ser. No. 256,838
Int. Cl. H05b 37/00
U.S. Cl. 315—200 A **14 Claims**

A circuit for flashing a xenon or other high power flash lamp employs a capacitor incrementally charged from a non-satu-

rating inductor storing energy supplied at a low dc voltage. A transistor switches current to the inductor. The transistor is controlled by a transformer having a primary connected across the inductor. At the beginning of each capacitor charging cycle the transistor is turned on by regenerative action through the transformer. Current is supplied to the inductor



until the transformer saturates, causing transistor turn-off. Energy stored in the inductor then is transferred to the capacitor via a diode. A reverse current coupled through the transformer maintains the transistor off until substantially all energy stored in the inductor has been transferred to the capacitor. The charging cycle repeats until the voltage across the capacitor is sufficient to fire the lamp.

3,772,565

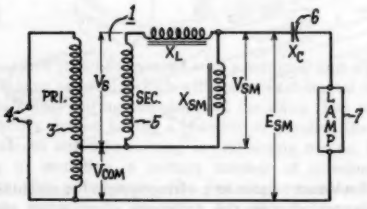
LAMP BALLAST DEVICE

James E. Lenz, Hendersonville, and Wayne R. Neal, Fletcher, both of N.C., assignors to General Electric Company

Filed July 28, 1972, Ser. No. 275,947

Int. Cl. H05b *41/391*

U.S. Cl. 315—276 **10 Claims**



Electrical ballast provides regulation of the operating wattage for gaseous discharge lamps such as high pressure sodium lamps over the entire life of the lamp. Ballast comprises a high leakage reactance transformer having primary and secondary windings on different core portions with a magnetic shunt between the windings, slots in the core under the secondary winding, and a capacitor connected in series with the secondary winding. The transformer is constructed so that its leakage reactance is from two to four times the capacitive reactance provided by the series capacitor. The control of the leakage reactance is obtained by provision of a predetermined cross-sectional area of the magnetic shunt in combination with a non-magnetic gap.

3,772,566

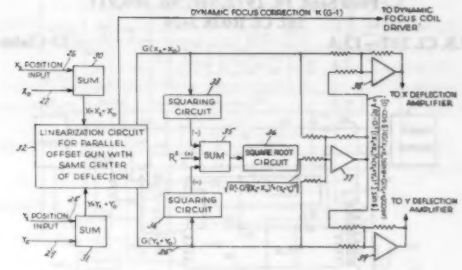
LINEARIZATION OF MAGNETICALLY DEFLECTED CATHODE RAY TUBE WITH NON-AXIAL GUNS

Jacob H. Schwartz, Bronx, N.Y., assignor to Loral Corporation, Scarsdale, N.Y.

Filed May 7, 1971, Ser. No. 141,134

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 GD **5 Claims**



Linearization means permitting the use of a plurality of magnetically deflected electron guns within a single Cathode-Ray Tube in which at least one of the guns is displaced from the longitudinal tube or screen axis, and in which the yoke deflection currents are compensated to allow proper registration between images formed by separate guns. The corrective function, for a laterally displaced gun, which is mathematically complex is simplified to a form more readily produced by a function generator, and is used to modify the uncorrected deflection voltages which control the beam deflection currents. A means for extending this technique to electron guns which are not parallel to the longitudinal or screen axis is also provided.

3,772,567

ACCELEROMETER

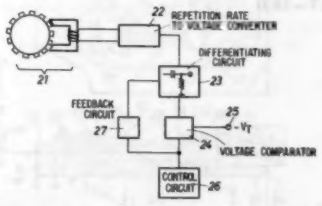
Heinz Leiber, Leimen, and Anton Rodi, Karlsruhe, both of Germany, assignors to Teldix GmbH, Heidelberg, Germany

Filed Nov. 17, 1971, Ser. No. 199,643

Claims priority, application Germany, Aug. 23, 1971, P 21 42 147.6

Int. Cl. G01p *15/08;* **B60t** *8/06*

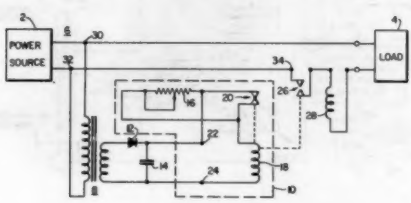
U.S. Cl. 317—5 **7 Claims**



An accelerometer having means for providing a delayed response and which follows the actual rate of change in velocity. The accelerometer follows the actual effective deceleration and/or acceleration with a delay due to its time constant and responds only after a time interval after a deceleration and/or acceleration threshold has been exceeded by the actual deceleration. There is provided means effective directly after the delayed response to the accelerometer for rendering further influence of an increase in the deceleration and/or acceleration ineffective whereby response of the accelerometer ceases without delay when the actual decelera-

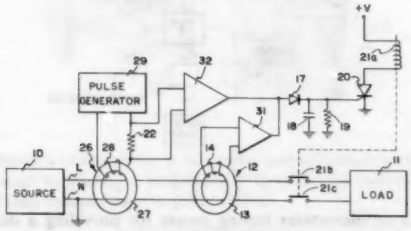
tion and/or acceleration falls below the threshold. The accelerometer furnishes an output signal particularly useful for influencing pressure at brakes of a vehicle provided with an antilocking control system.

3,772,568
LOW VOLTAGE APPLIANCE PROTECTOR
Paul D. Phillips, Williamson, W. Va., assignor to Gerald L. Chafin, Delbarton, W. Va., a part interest
Filed Sept. 14, 1972, Ser. No. 288,911
Int. Cl. H02h *3/24*
U.S. Cl. 317—13 A 13 Claims



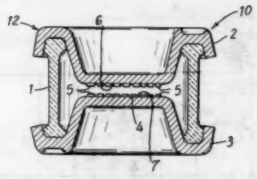
A method and apparatus for disconnecting a load from a power source when the voltage from the power source falls below a first predetermined level and for reconnecting the load to the power source when the voltage rises above a second predetermined level. The voltage of the power source is constantly sensed and when the voltage falls below a first predetermined level a switch means, which is connected between the power source and the load, is opened, thereby disconnecting the load from the power source. An auxiliary coil is placed in series with the load so that, when a load drawing an initially large current is connected to the power source, the increased current through the auxiliary coil produces a magnetic force to hold the switch means closed even though a voltage below the first predetermined level is sensed. In this manner, false disconnection of the load from the power source is prevented.

3,772,569
GROUND FAULT PROTECTIVE SYSTEM
Paul E. Wible, Alamo, Calif., assignor to The Rucker Company, Oakland, Calif.
Filed Sept. 5, 1972, Ser. No. 286,145
Int. Cl. H02h *1/02*
U.S. Cl. 317—18 D 3 Claims



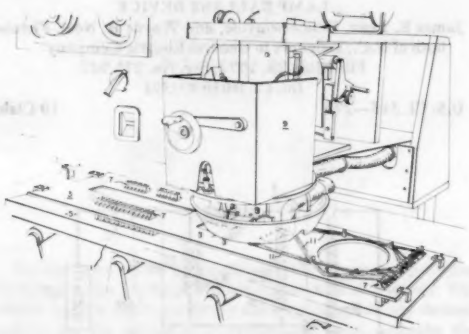
Ground fault protective system including means for detecting grounding of the neutral conductor independently of the means for detecting ground faults. The secondary winding of a transformer is connected in series with the neutral conductors, and the primary winding of the transformer is energized. Grounding of the neutral conductor is detected by an increase in the primary current.

3,772,570
GAS-DISCHARGE OVERVOLTAGE ARRESTER
Gerhard Lange, and Gerhard Peche, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Nov. 24, 1971, Ser. No. 201,756
Claims priority, application Germany, Feb. 11, 1971, P 21 06 511.2
Int. Cl. H02h *9/06*
U.S. Cl. 317—62 11 Claims



This invention provides in a gas-discharge overvoltage arrester having a gas-tight housing in which is mounted a pair of electrodes spaced apart from each other and with their active surfaces exposed to each other, an improvement comprises a thin glased layer of an alkali-containing material formed in small islands on the active surface of at least one electrode.

3,772,571
ELECTRICAL CONNECTING DEVICE FOR COMPONENT WIRING PANELS
Roydon William Merry, Harrisburg, Pa.; Stuart L. Parsons, Clearwater, Fla., and Charles Edward Reynolds, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation of Ser. No. 152,314, June 11, 1971, abandoned.
This application Nov. 28, 1972, Ser. No. 310,032
Int. Cl. H02b *1/04*
U.S. Cl. 317—99 7 Claims

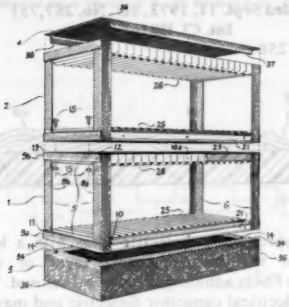


The disclosure relates to a wiring system for machine wiring of appliances wherein the appliance components are easily serviceable and removed with a minimum of wire disconnection. The disclosure further relates to a terminating device comprising a slug or wedge having locking ears therein and an inward bevel from all four sides at the end thereof abutting a wire, the terminal having a cut out for receiving the locking ears to provide a friction as well as a locking connection.

3,772,572
PLUG-IN EQUIPMENT STORAGE UNIT
John Lester Marquette, 126 E. Green St., Westminster, Md.
Filed May 31, 1972, Ser. No. 258,407
Int. Cl. H02b *1/02*
U.S. Cl. 317—101 DH 5 Claims

A low cost protective and visual storage of plug-in equipment in a basic metal frame made of a plurality of angle pieces

having perpendicular flanges, said frame equipped with a plurality of side-by-side tracks and guides and which are easily variable in position or proportion and replaceable to facilitate



the storing of a variety of plug-in equip-ment, safely and securely, in the normal operating position of the plug-in equipment.

3,772,573

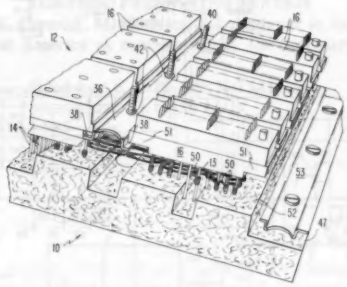
MOLDED PALLET

Gerald H. Triplett, and Thomas A. Dowds, both of Plymouth, Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed July 5, 1972, Ser. No. 269,020

Int. Cl. H02b *1/04*

U.S. Cl. 317—101 R **7 Claims**



A one-piece pallet to be used with a terminal and wire side of a backplane assembly which will prevent accidental damage to the assembly during shipping and installing. The pallet is rectangularly shaped having a plurality of parallel ribs which extend across one side serving as restraining means. During shipping or installing, a certain number of terminals will penetrate the polystyrene ribs insuring retention of the backplane assembly to the pallet. Access apertures are provided on the pallet for facilitating the mounting of the backplane assembly to a backplane support frame. In addition, the disclosure includes a method of mounting a backplane assembly onto a pallet and the removal of the pallet from the backplane assembly after its installation.

3,772,574

ELECTRICAL COMBINATION LOCK

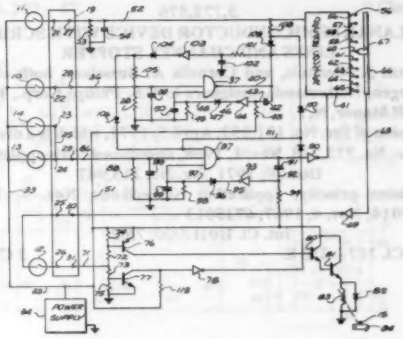
David C. Hughes, Cos Cob, Conn., assignor to Intelligence Services Products Division Inc., Syosset, N.Y.

Filed June 20, 1972, Ser. No. 264,648

Int. Cl. E05b *49/00*

U.S. Cl. 317—134 **10 Claims**

An electrical combination lock includes a hidden magnetic reed array, a pulse counter coupled by digital circuitry to the reed array, and an electrically controllable lock coupled to the counter. If predetermined reeds of the array are operated with a magnet in a predetermined sequence within a predetermined time, the counter provides a signal which causes the lock to open. If the reeds are operated in any other order, such operation disables the counter for a predetermined unit of time during which the lock cannot be opened. Thus, knowledge of the location of the magnetic reeds and the sequential operation of particular magnetic reeds within a predetermined time are required in order to open the lock.



3,772,575

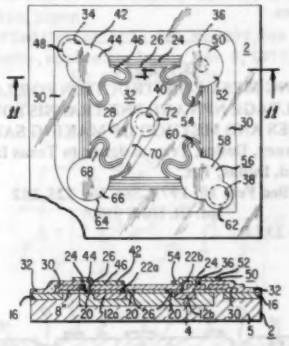
HIGH HEAT DISSIPATION SOLDER-REFLOW FLIP CHIP TRANSISTOR

Brian Anthony Hegarty, and Lewis Herbert Trevail, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 28, 1971, Ser. No. 138,244

Int. Cl. H01l *1/12, 1/14, 13/00*

U.S. Cl. 317—235 R **2 Claims**



An improved method of flip-chip mounting a semiconductor device, such as a transistor, on a pattern of electrical conductors carried on an insulating substrate, comprising providing the device chip with a glass protective layer and on the glass layer metallized bonding pads adjacent to the corners of the chip. Each of the bonding pads includes a relatively wide portion adapted to contain a relatively high mound of solder, and a second portion of a relatively narrow width capable of holding only a thin layer of solder. The thin solder layers overlie heat-generating P-N junction portions of the device. The conductors on the substrate have solder-wettable portions of larger areas than the bonding pads on the chip. Solder balls are placed on the wide portions of the bonding pads and

melted to reflow the solder. The chip is then placed face down over the conductors on the substrate and the solder is again reflowed so that the relatively high mounds collapse to the thickness of the thin solder layer portions and the relatively thin solder layer portions are joined directly to the substrate conductors.

3,772,576

PLANAR SEMICONDUCTOR DEVICE WITH SCRIBE LINES AND CHANNEL STOPPER

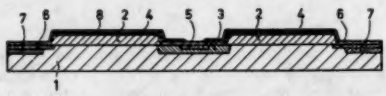
Rijkent J. Nienhuis, and Cornelis A. Busselaar, both of Nijmegen, Netherlands, assignors to U.S. Philips Corp., Briarcliff Manor, N.Y.

Division of Ser. No. 131,252, April 5, 1971, which is a division of Ser. No. 772,718, Nov. 1, 1968, abandoned. This application Dec. 30, 1971, Ser. No. 213,947

Claims priority, application Netherlands, Nov. 4, 1967, 6715014; Nov. 4, 1967, 6715013

Int. Cl. H01l *5/00, 7/02*

U.S. Cl. 317—235 E **5 Claims**



A discrete semiconductor device and method of making same by severing a chip from a wafer containing a plurality of such devices made by planar techniques is described. The invention features the diffusion of a continuous grid pattern, preferably simultaneously with the base diffusion, defining future scribe lanes along which the wafer will be scribed prior to severance into chips. Subsequently, a second diffusion step, preferably simultaneously with the emitter diffusion, is carried out to provide, completely overlapping the previously diffused region, an annular region having a higher dopant level to inhibit creation of a channel between the base region and the chip edge. Subsequently, the wafer is severed into chips along the scribe lanes.

3,772,577

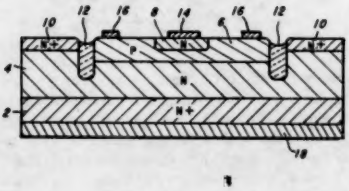
GUARD RING MESA CONSTRUCTION FOR LOW AND HIGH VOLTAGE NPN AND PNP TRANSISTORS AND DIODES AND METHOD OF MAKING SAME

William B. Planey, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 10, 1972, Ser. No. 225,202

Int. Cl. H01l *9/00*

U.S. Cl. 317—235 R **17 Claims**



1

Disclosed is a high voltage semiconductor PN junction device of mesa construction which features a highly doped collector guard ring circumscribing the mesa. By terminating any induced collector-base inversion layers in the guard ring, increased temperature stability and decreased reverse current leakage characteristics are achieved.

3,772,578

IMPREGNATED CAPACITOR

Philip D. George, and Robert J. Boudreau, both of Glens Falls, N.Y., assignors to General Electric Company, Hudson Falls, N.Y.

Filed Sept. 11, 1972, Ser. No. 287,751

Int. Cl. H01g *3/195*

U.S. Cl. 317—258 **12 Claims**

A thin polypropylene dielectric strip with a low density highly porous non-self supporting layer of super fine polypropylene fibers adhering thereto is disclosed. The strip is useful as an electrical capacitor dielectric and may be metallized as a capacitor electrode.

3,772,579

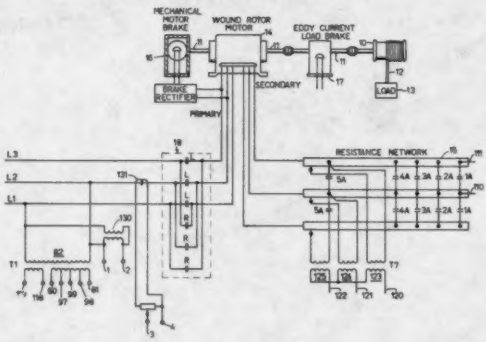
CONTROL MEANS FOR HIGH SPEED HOIST

David W. Stone, Franklin, Wis., and Manfred A. Hansen, Renton, Wash., assignors to Harnischfeger Corporation, W. Milwaukee, Wis.

Filed Sept. 11, 1972, Ser. No. 287,706

Int. Cl. H02p *1/40*

U.S. Cl. 318—203 R **8 Claims**



A control means for a high speed electric hoist or crane having an induction motor permits motor operation in the "raise" or "lower" direction at controlled speeds up to full load hoisting speed (i.e., the approximately synchronous speed of the motor). The control means also permits the motor to operate automatically in the "lower" direction so as to differentiate between a "light" and a "heavy" load and to allow a light load to free fall up to 275 percent of motor synchronous speed but forcing a heavy load to be lowered normally at a restrained speed of about 100 percent of motor synchronous speed.

3,772,580

SYNCHRONIZING SYSTEM TO SYNCHRONIZE THE SPEED OF A DC MOTOR WITH THE FREQUENCY OF A COMMAND PULSE TRAIN

Giovanni Odone, Saint-Sulpice, Switzerland, assignor to Silma S.p.A., Rivoli (Turin), Italy

Filed Dec. 13, 1971, Ser. No. 207,291

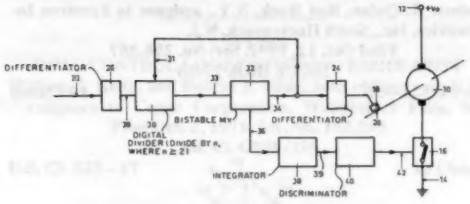
Claims priority, application Italy, Dec. 11, 1970, 71123 A/70

Int. Cl. H02p *5/16*

U.S. Cl. 318—318 **11 Claims**

A controlled switch is connected in the power supply of a motor. The ON-OFF time of the controlled switch is deter-

mined by a circuit which includes a multi-vibrator which changes state in accordance with the relative rate of occurrence of pulses of the command pulse train and a pulse train proportional to motor speed; a divider circuit is connected to have the command pulse train applied thereto, and divides the frequency thereof by a value of n, in which $n \geqq 2$, the divided



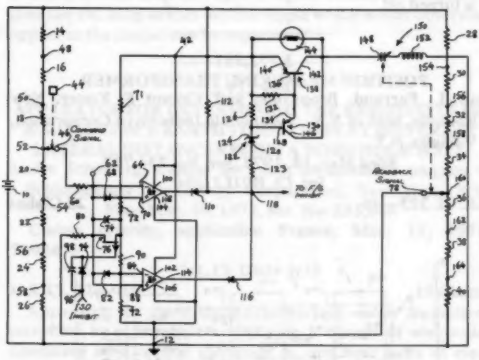
pulse train being applied to trigger the multi-vibrator to set, that is, to cause closing of the controlled switch, the pulses proportional to motor speed being applied to the multi-vibrator to re-set the multi-vibrator, the set-re-set time period of the multi-vibrator controlling the ON-OFF time of the controlled switch. Inhibit circuits can be provided to prevent spurious switching of the bistable multi-vibrator.

3,772,581

TORPEDO PRESETTING SYSTEM

William F. Cormier, Middletown, R.I., assignor to the United States of America as represented by the Secretary of the Navy

Filed Apr. 6, 1972, Ser. No. 241,764
Int. Cl. G05b *11/14*
U.S. Cl. 318—685 **4 Claims**



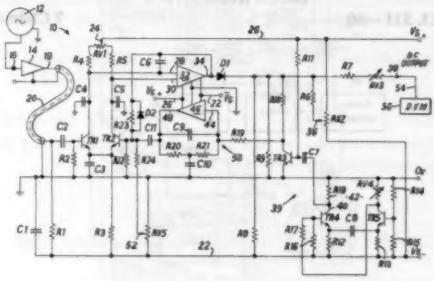
An automatic presetting circuit for controlling remotely located rotary stepping relays of a torpedo in a torpedo launching system. The average of a COMMAND signal voltage and a READBACK signal voltage is compared with a single standard voltage to determine any unbalanced condition between the two. As a result of an unbalanced condition, one of the two high gain D.C. amplifiers used as comparators is triggered to give rise to an output which energizes the solenoid of a stepping relay of the torpedo and move the position of the relay arm until a balanced condition is attained.

3,772,582

A.C. TO D.C. CONVERTER CIRCUITS

Edward Albert Martin, Fleet, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed July 26, 1972, Ser. No. 275,391
Claims priority, application Great Britain, July 27, 1971, 35,299/71
Int. Cl. H02m *7/00*
U.S. Cl. 321—47 **9 Claims**



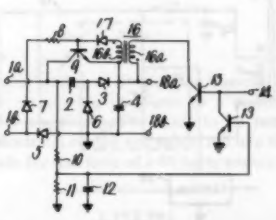
An A.C. to D.C. converter comprises two matched rectifiers, the first of which is connected to receive the A.C. input signal to be converted. The D.C. outputs of the two rectifiers are connected to the respective inputs of a differential amplifier, whose output is fed to a fixed-frequency chopper circuit. The output of the chopper circuit is filtered to render it sinusoidal, and then fed to the second rectifier. Since the rectifiers are matched, and receive respective inputs which are equal in amplitude and similar in waveform, the second rectifier compensates for the non-linear rectifying characteristics of the first, and the amplitude of the D.C. output of the differential amplifier is linearly related to the amplitude of the A.C. input signal.

3,772,583

POWER SUPPLY CIRCUIT

Hiroshi Sahara, Tokyo; Tamiji Nagai, Kanagawa, and Hisafumi Yamada, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 24, 1972, Ser. No. 299,849
Claims priority, application Japan, Nov. 5, 1971, 46/102996
Int. Cl. H02m *7/00*
U.S. Cl. 321—15 **8 Claims**



Alternating current at one of a plurality of different voltages is converted to a predetermined direct current voltage by a rectifying circuit which includes a plurality of capacitors and a rectifier connected in series with a pair of AC input terminals to charge the capacitors in such a manner as to divide the voltage between the capacitors. One of the capacitors has a pair of output terminals connected across it and a transistor switch is connected in parallel with the rectifier and the remaining capacitor to cause the current charge from the remaining capacitor to be delivered to the capacitor connected between the output terminals. A detecting circuit detects the voltage value of the input AC voltage and produces a detected output response which causes a control circuit connected to the

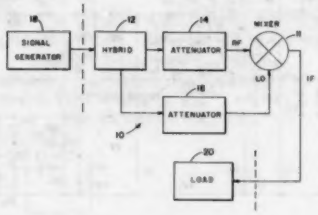
transistor switch to change the manner of the rectifying operation of the rectifying circuit.

3,772,584

HOMODYNE MULTIPLIER

Thomas A. Barley, and Gustaf J. Rast, Jr., Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

Filed Sept. 14, 1972, Ser. No. 289,025
Int. Cl. H02m 5/16
U.S. Cl. 321—60 7 Claims



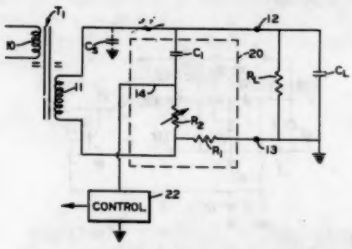
In the homodyne multiplier, a frequency mixer has both the radio frequency and local oscillator input ports driven by the same signal source, generating multiples of the input frequency as output signals. The signals coupled to the respective input ports of the mixer are controllable in phase and amplitude with respect to each other. The output of the mixer then generates a large number of signals which have a high degree of phase coherence with the original driving signal. Since the mixer functions as a non-linear combination element, phase perturbations are not internally generated which adversely affect coherence. Attenuators in the transmission lines to the mixer inputs allow adjustment of signal levels.

3,772,585

CAPACITY COMPENSATION AND DISCRIMINATION CIRCUITS FOR HIGH VOLTAGE POWER SUPPLY

Lambert L. Johnson, Fort Wayne, Ind., assignor to General Electric Company, Indianapolis, Ind.

Filed Feb. 28, 1973, Ser. No. 336,464
Int. Cl. G03g 15/00; G05f 1/14
U.S. Cl. 323—7 6 Claims



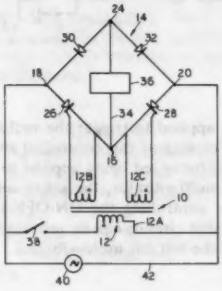
A high voltage power supply having regulated resistive current. The power supply is in an environment for drawing both resistive and capacitive currents. It is desired to regulate the resistive current only and to cancel out and/or discriminate against the capacitive current. The power supply utilizes a novel capacitive compensation network which adds a voltage of an equal magnitude but in an opposite phase relationship to the voltage due to the capacitive current through the power supply. This circuit is effective for cancelling out capacitive currents for certain relatively low frequency ranges. A phase discriminator is further provided to operate in conjunction with the capacitive compensation circuit in order to pass only the resistive component of current to a control circuit for resistive current regulation. The effect of the capacitive current is thus cancelled and discriminated against by combining the capacitive compensation network with the phase discrimination network and effective regulation is obtained for higher frequencies.

3,772,586

FIRING CIRCUIT AND TRANSFORMER

Frederic R. Quinn, Red Hook, N.Y., assignor to Zyrotron Industries, Inc., South Hackensack, N.J.

Filed Oct. 12, 1972, Ser. No. 296,887
Int. Cl. H03k 17/66
U.S. Cl. 323—35 19 Claims



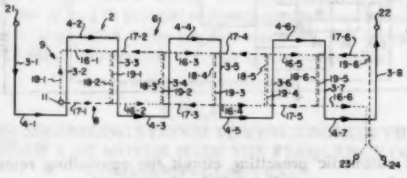
The firing circuit is adapted to be utilized with a silicon controlled rectifier bridge circuit and includes a transformer having a central leg bracketed by respective outer legs. The primary and a pair of secondary windings are wound on the central leg. The primary winding is adapted to be connected with a source of potenial and each secondary winding is adapted to be connected between the cathode and gate electrodes of respective silicon controlled rectifiers in the bridge circuit. The reluctance path in at least one of the outer legs is increased whereby one silicon controlled rectifier is gated on at substantially the same time the other silicon controlled rectifier is turned off.

3,772,587

POSITION MEASURING TRANSFORMER

Clair L. Farrand, Bronxville, and Vincent F. Foster, New Rochelle, both of N.Y., assignors to Inductosyn Corporation, Valhalla, N.Y.

Filed Mar. 15, 1972, Ser. No. 234,792
Int. Cl. H01f 21/04
U.S. Cl. 323—46 23 Claims



Disclosed is a position-measuring transducer which is more uniformly accurate from one position to another in the presence of undesired anomalies. The transducer has at least one winding formed from two continuous, printed winding sections where those sections are spacially arrayed and electrically connected to neutralize error-causing couplings. A two-phase embodiment includes sine and cosine windings each arrayed in two layers, all of which are combined together op-

posite each other in a four-layer structure. Additional embodiments include a two-layer linear transducer, a four-layer multi-cycle rotary transducer, and a four-layer single-cycle rotary transducer. In those embodiments, the sine and cosine windings individually are structured to neutralize unwanted coupling and provide compensation for quadrature error within each space cycle. Quadrature compensation and harmonic cancellation techniques are employed. Two continuous winding sections per winding achieve smooth, uniformly low errors with reduced sensitivity to undesired anomalies.

3,772,588

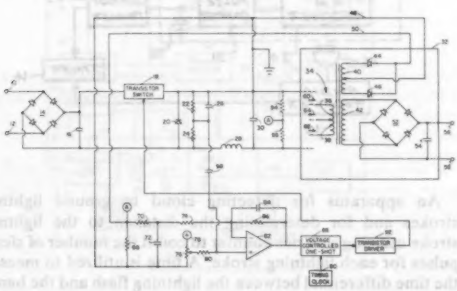
DUAL CONTROL LOOP SWITCHING REGULATOR

William J. Kelly, and Robert J. Titus, both of Sauquoit, N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,590

Int. Cl. G05f *1/56*

U.S. Cl. 323—17 **15 Claims**



A switching regulator having a conventional switching transistor and filter, and DC feedback loop which controls the duty cycle of the switching transistor in accordance with the output voltage. The regulator includes an additional AC feedback loop, the input to the feedback path being taken at a point in the forward path of the regulator which precedes the filter. In this way, the filter is not included in the second loop and this second loop can have a higher cross-over frequency than the DC loop so that the line ripple which would otherwise appear at the output can be suppressed.

3,772,589

APPARATUS FOR DETERMINING THE RESISTIVITY OF A SUBSURFACE EARTH FORMATION AT DIFFERENT LATERAL DISTANCES FROM A BORE HOLE WALL

Andre Scholberg, Canton de Vaud, Switzerland, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 10, 1972, Ser. No. 233,668

Claims priority, application France, Mar. 11, 1971, 7108426

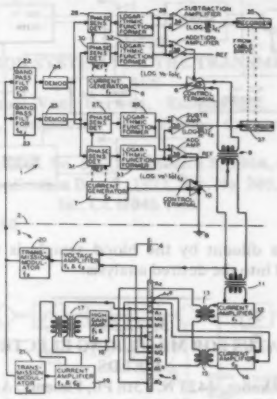
Int. Cl. G01v *3/18*

U.S. Cl. 324—10 **15 Claims**

Apparatus for investigating subsurface earth formations traversed by a borehole comprising a system of electrodes consisting of a central electrode A_o and four pairs of electrodes M_1–M'_1, M_2–M'_2, A_1–A'_1, A_2–A'_2 respectively short-circuited and aligned symmetrically on both sides of the electrode A_o.

This apparatus comprises arrangements which, for a frequency f_2, establish a potential gradient between electrodes A_1–A'_1 and A_2–A'_2. A source of alternating current of frequency f_1 is connected between the electrodes A_1–A'_1 and A_2–A'_2 and a source of alternating current of frequency f_2 between a surface electrode B and electrodes A_2–A'_2. The potential difference between electrodes M_1–M_2 and M'_1–M'_2 is maintained substantially at zero by circulating a current between electrodes A_1–A'_1 and electrode A_o.

Such an apparatus allows simultaneous measurement in a borehole of the electrical resistivities of the subsurface earth



formations extending over relatively small and relatively large lateral distances from the wall of the borehole.

3,772,590

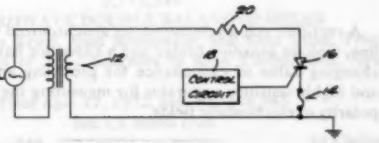
METHOD OF PRODUCTION TESTING FUSES AND CIRCUIT FOR ACCOMPLISHING SUCH TESTING

Harvey W. Mikulecky, and William J. Huber, both of Racine, Wis., assignors to McGraw-Edison Company, Milwaukee, Wis.

Filed May 24, 1972, Ser. No. 256,381

Int. Cl. H01h *85/30*

U.S. Cl. 324—28 R **13 Claims**



Quality control testing of production current limiting fuses is achieved by subjecting the fuses to a minimum melt I^2t (amp^2 seconds) condition. The fuses to be tested are connected in an electrical circuit and subjected to a test current of given magnitude for one loop of a 60 hertz source.

3,772,591

METHOD AND APPARATUS FOR ANALYZING BLOOD PROPERTIES

Nevitt M. Louder, Penn Hills, and Konald Ferrie, Pittsburgh, both of Pa., assignors to Fisher Scientific Company, Pittsburgh, Pa.

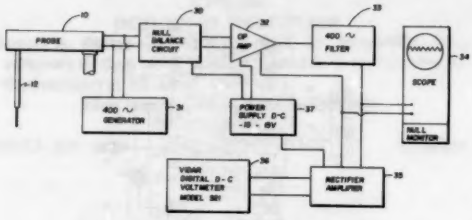
Filed Apr. 12, 1972, Ser. No. 243,182

Int. Cl. G01n *27/42*

U.S. Cl. 324—30 R **2 Claims**

Method and apparatus for determining the hematocrit and related properties of blood samples by determining the electrical conductance thereof. A sample probe is employed which has two spaced electrodes in the form of capillary tubes on either side of a nonconducting capillary tube. The probe forms

an electrical resistivity measuring leg of an A-C bridge circuit and the unbalance of the circuit caused by replacement of a



portion of a diluent by the blood sample is measured and transformed into the desired analysis.

3,772,592

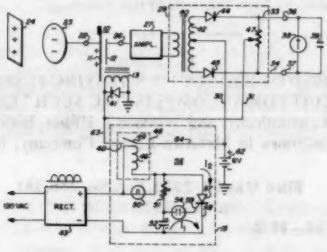
APPARATUS FOR MEASURING ELECTROSTATIC FIELDS

William A. Rhodes, 4421 N. 13th Pl., Phoenix, Ariz.

Filed June 30, 1972, Ser. No. 268,213

Int. Cl. G01r *5/28, 29/12*

U.S. Cl. 324—32 **6 Claims**



A rectifier, skip-cycle converter synchronized with an A. C line, a phase sensitive bridge and a capacitor having a rapidly changing value of capacitance for providing an inexpensive and highly sensitive apparatus for measuring the strength and polarity of electrostatic fields.

3,772,593

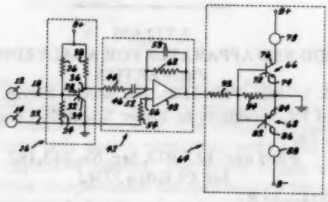
RESISTANCE MEASUREMENT SYSTEM

Pawitter S. Sidhu, 3450 Scadlock Ln., Sherman Oaks, Calif.

Filed Nov. 3, 1971, Ser. No. 195,331

Int. Cl. G01r *27/02*

U.S. Cl. 324—62 R **8 Claims**



A resistance measurement system for measuring the change in the value of a resistance. An input circuit provides an output signal proportional to the value of the resistance. The output of the input circuit is coupled to an amplifier circuit which provides an amplified output signal representative of changes in the resistance. The output of the amplifier circuit is coupled to a display circuit which provides an indication when the resistance has increased or decreased a predetermined amount. Alternatively, the input circuit may provide an indication of the percentage change in the value of the resistance.

3,772,594

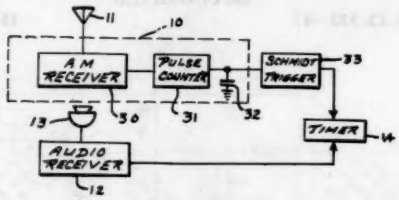
LIGHTNING FLASH-TO-BANG DETECTOR

Irving Kuehnast, 104 Surf Dr., Cocoa Beach, Fla.

Continuation-in-part of Ser. No. 33,322, April 30, 1970, abandoned. This application Oct. 3, 1972, Ser. No. 294,754

Int. Cl. G01w *1/00*

U.S. Cl. 324—72 **6 Claims**



An apparatus for detecting cloud to ground lightning strokes and for determining the distance to the lightning stroke utilizing a sferics counter to count the number of sferics pulses for each lightning stroke. A time is utilized to measure the time differential between the lightning flash and the bang.

3,772,595

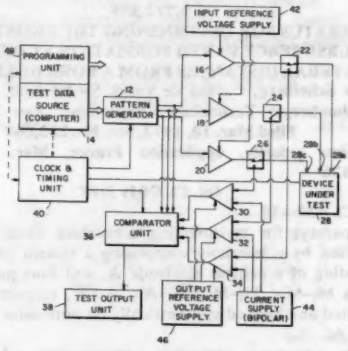
METHOD AND APPARATUS FOR TESTING A DIGITAL LOGIC FET BY MONITORING CURRENTS THE DEVICE DEVELOPS IN RESPONSE TO INPUT SIGNALS

Nicholas De Wolf, Boston, Mass., and John G. Turner, Kingston, Surrey, England, assignors to Teradyne Inc., Boston, Mass.

Filed Mar. 19, 1971, Ser. No. 126,035

Int. Cl. G01r *15/12*

U.S. Cl. 324—73 R **14 Claims**



A circuit tester examines MOS and other semiconductor logic devices at the high frequency of normal operation by measuring the current handling capability of the device. The tester performs the operation by sensing the current which the device delivers to, or draws from, a load of low resistance. The tester in one embodiment applies bursts of test data to the device under test at megaHertz rates by means of a pattern

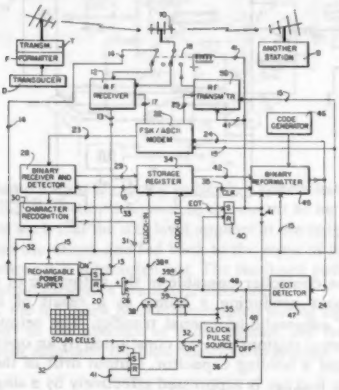
generator which allows ready adjustment of the burst length and configuration. The output detector for the tester senses the operation of the device under test as a source or sink of current.

3,772,596

DATA MESSAGE REPEATER SYSTEM

Carson Penrod Edwards, Boulder, Colo., assignor to Sierra Research Corporation, Buffalo, N.Y.

Filed Oct. 2, 1972, Ser. No. 294,302
Int. Cl. H04b 7/18
U.S. Cl. 325—13 **7 Claims**



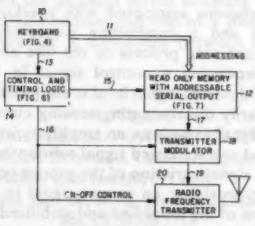
A repeater system for receiving data messages from a transmission medium, the messages being formatted to include a start character, one or more address code characters and an end-of-transmission character; the system converting the message into binary serial form and demodulating the data and storing it in a register, and then subsequently reconstituting it into a newly formatted message and retransmitting it to another station with an appropriate new address code, the illustrative embodiment using FSK transmitters and receivers operating on the same frequency; and the system being especially adapted for automatic unattended operation in which a power supply is recharged by solar cells and is turned "on" and "off" by logic means in such a way as to conserve power; and said system including means for locally monitoring the data passing through a repeater.

3,772,597

CODE TRANSMISSION SYSTEM

Harris A. Stover, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed May 19, 1972, Ser. No. 255,200
Int. Cl. H04b 1/00
U.S. Cl. 325—38 R **4 Claims**



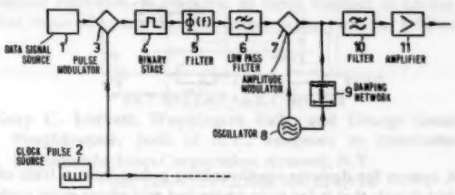
A code transmission means comprising a compact keyboard of multi-functional keys and binary code word generation means compatible with handheld communication sets. Stored multibit code words for key selected symbols to be transmitted are addressed out of storage memory to provide time synchronous bit-rate code word modulation of a transmitter in automatic sequence following keyboard symbol selection. A teleprinter code transmission system is exemplifid.

3,772,598

TRANSMISSION SYSTEM FOR THE TRANSMISSION OF PULSES

Petrus Josephus Van Gerwen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 532,744, March 8, 1966, abandoned.
This application Dec. 7, 1971, Ser. No. 205,748
Int. Cl. H04b 1/68
U.S. Cl. 325—50 **7 Claims**



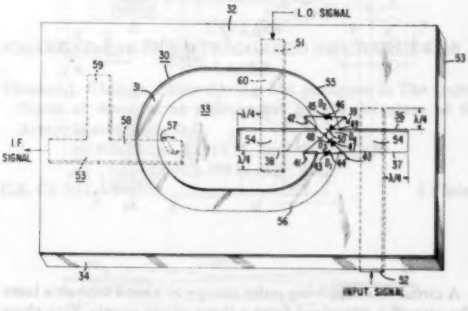
The frequency spectrum of bivalent pulses is modified for transmission as a suppressed carrier single sideband signal. The frequency response shaping network characteristics are $\sin n\pi f T$, with T being the period of the bivalent pulses, f their frequency and n an integer, including zero. A pilot of the same frequency as the suppressed carrier is transmitted to the receiver which contains an amplitude demodulator and pulse regenerator.

3,772,599

MICROWAVE DOUBLE BALANCED MIXER

Robert Lewis Ernst, East Brunswick, and Shui Yuan, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 17, 1972, Ser. No. 244,565
Int. Cl. H04b 1/26
U.S. Cl. 325—446 **10 Claims**



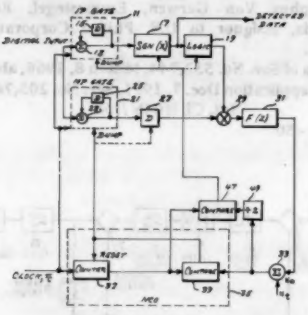
A slot transmission line and a microstrip transmission line provide the design of a double balanced mixer operable at microwave frequencies.

3,772,600

DIGITAL BIT SYNCHRONIZER

Francis D. Natali, San Francisco, Calif., assignor to the United States of America as represented by the Secretary of the Air Force

Filed July 14, 1972, Ser. No. 271,945
Int. Cl. H03k 1/00, 5/00
U.S. Cl. 328—63 2 Claims



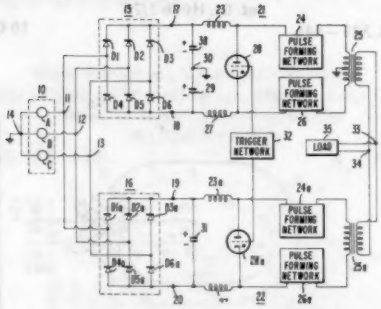
A system for deriving synchronizing pulses from a train of digital signals that is fed to in-phase and mid-phase gates each including an adder with a delay feedback. The output of the mid-phase gate is multiplied by a sign factor determined by a logic circuit connected to the in-phase gate. The output of the two gates are then mixed, filtered, and summed with a value dependent upon the clock rate and fed to a number controlled oscillator which includes a counter and a comparing circuit. The output of the number controlled oscillator is fed back to the in-phase and mid-phase gates.

3,772,601

DUAL CHANNEL BALANCED LINE TYPE MODULATOR

William Irving Smith, Burlington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 287,723
Int. Cl. H03k 3/02
U.S. Cl. 328—65 11 Claims



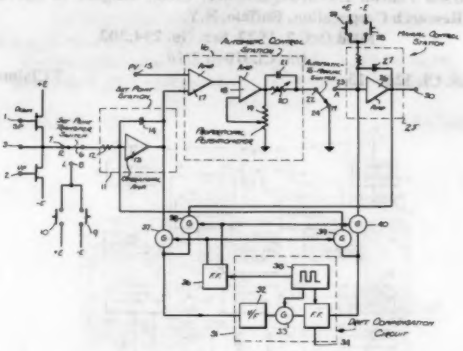
A circuit for supplying pulse energy to a load such as a laser. The circuit is energized from a three phase supply. One channel operates on the crests of the phase voltages supplied while a second channel operates on the crests of the phase to phase voltages. The circuit provides, in effect, multiple phase rectification in a line type pulser operation without a rectifying transformer.

3,772,602

PROCESS CONTROLLER WITH BUMPLESS TRANSFER

Tamotsu Kobayashi, Yokohama, Japan, assignor to Fischer & Porter Company, Warminster, Pa.

Filed Sept. 5, 1972, Ser. No. 286,065
Int. Cl. H03k 17/02
U.S. Cl. 328—71 1 Claim



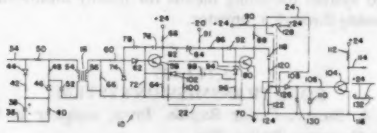
A process controller operable in the automatic or manual mode without producing a bump as a result of setpoint transfer or automatic-to-manual transfer. The setpoint and manual control stations may be constituted by an operational amplifier and a holding capacitor. Output drift of these stations due to leakage is suppressed effectively by a single drift compensation circuit whose output is applied to these stations selectively or alternately on a time-sharing basis.

3,772,603

STRUCTURE FOR AND METHOD OF PULSE AMPLITUDE DETECTION

Robert W. Drushel, Farmington, Mich., assignor to Ex-Cell-O Corporation, Detroit, Mich.

Division of Ser. No. 583,875, Oct. 3, 1966, Pat. No. 3,591,851.
This application July 6, 1971, Ser. No. 163,530
Int. Cl. H03k 5/18, 5/20
U.S. Cl. 328—108 4 Claims



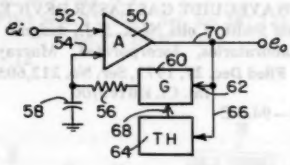
A highly sensitive and completely stable circuit for and method of detecting low amplitude, short duration direct current signal variations associated with sparking between an electrode tool and a conducting workpiece in an electrochemical machining process or the like and substantially immediately producing a control signal in response to a predetermined detected signal level is disclosed. The structure includes a polarity discriminating sensing circuit for initially detecting the signal variations, an amplifier circuit for providing an amplified and stabilized signal substantially immediately on sensing a signal variation of the proper polarity and output circuit for providing an output signal in response to a selected portion of the amplified and stabilized signal, including means for selecting the level of the selected signal portion operable to provide the output signal, means for cutting off the amplified and stabilized signal when the selected level is below a predetermined minimum and means responsive to a

number of amplified and stabilized signals, which have a level below the selected level received in a predetermined time for providing an output signal.

3,772,604
NON-RECTIFYING CLAMPS

Walter R. Hogg, Miami Lakes, and Wallace H. Coulter, Miami Springs, both of Fla., assignors to Coulter Electronics, Hialeah, Fla.

Filed May 12, 1972, Ser. No. 252,794
Int. Cl. H03k 5/08; H03b 3/02
U.S. Cl. 328—169 20 Claims



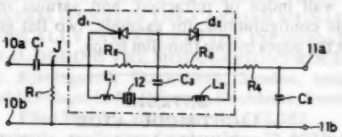
To clamp a train of electric pulses in a system having a small signal-to-noise ratio, the point in the circuit to be clamped is arranged such that the d.c. level appears at the output thereof, is filtered therefrom and fed back to the input of the clamped stage, where it is subtracted out. The feedback path is broken if the output exceeds a predetermined value.

Thus, the feedback path is interrupted during signal pulses. However, in the absence of pulse signals, the feedback arrangement maintains the base line close to ground.

3,772,605
FREQUENCY DISCRIMINATOR WITH CERAMIC OSCILLATOR

Tomiji Otajima; Koichi Oya, both of Tokyo; Takeo Nasu, and Hisatake Okamura, both of Yokohama, all of Japan, assignors to Taiyo Yuden Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1972, Ser. No. 300,409
Claims priority, application Japan, Oct. 21, 1971, 46/83501
Int. Cl. H03d 3/16
U.S. Cl. 329—117 7 Claims



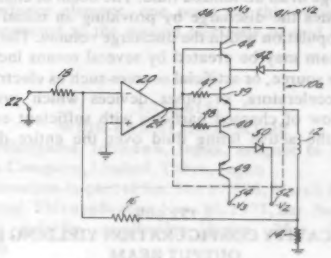
A frequency discriminator using a ceramic oscillator is provided which is characterized in that a series circuit comprising a coupling condenser and a resistor R1 is connected between input terminals and a series of parallel circuits comprising the ceramic oscillator, resistors, diodes, and a condenser are connected between the junction of the coupling condenser and the first mentioned resistor and one of a pair of output terminals. A condenser is connected between the output terminals.

3,772,606
MULTI-LEVEL POWER AMPLIFIER

Glenn C. Waehner, Riverside, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 28, 1972, Ser. No. 222,204
Int. Cl. H03f 3/18
U.S. Cl. 330—13 4 Claims

The collector voltages of a complementary emitter follower are maintained at a low voltage level when low levels of voltage are provided by the complementary emitter follower to a load. High levels of voltage are provided to the load through the complementary emitter follower by one of two auxiliary

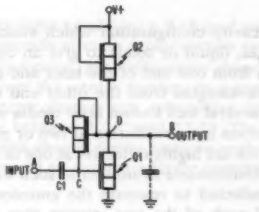


emitter followers, in response to input voltages in excess of that required to saturate the complementary emitter follower.

3,772,607
FET INTERFACE CIRCUIT

Gary C. Luckett, Wappingers Falls, and George Sonoda, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 9, 1972, Ser. No. 224,718
Int. Cl. H03f 3/16
U.S. Cl. 330—35 4 Claims

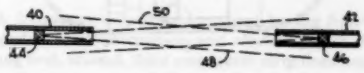


The specification describes an FET circuit for converting bipolar transistor signal levels to field effect transistor (FET) signal levels and includes a capacitor, a signal FET, a load FET and a feedback FET. The feedback FET is connected as a diode between the output of the circuit and the input to the signal FET biasing the input of the signal FET to a predetermined potential level that is slightly in excess of its threshold voltage drop.

3,772,608
CHARGED-PARTICLE TRIGGERED DISCHARGE FOR A LASER

Thomas J. Gleason, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 27, 1971, Ser. No. 183,920
Int. Cl. H01s 3/09, 3/22
U.S. Cl. 331—94.5 2 Claims



Method and apparatus for triggering a discharge in a laser utilizing charged particles. A source of charged particles injects a beam of charged particles throughout the discharge

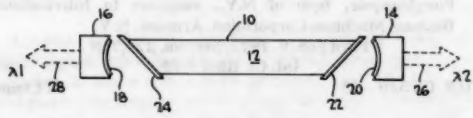
volume of a laser to create uniform ionization therein and thus trigger the electrical discharge needed to excite the lasing medium. This allows the applied electric field to be optimized for excitation without regard to the field required to initiate the discharge in an un-ionized fluid. The beam of charged particles initiates the discharge by providing an initial ion and electron population within the discharge volume. The charged particle beam may be created by several means including a radioactive source, or artificial sources such as electron guns, particle accelerators, or other devices which produce a directed flow of charged particles with sufficient energy to penetrate the active lasing fluid over the entire discharge volume.

3,772,609

LASER CAVITY CONFIGURATION YIELDING DUAL OUTPUT BEAM

Colin S. Willett, Keedysville, and John S. Kruger, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 30, 1972, Ser. No. 267,885
Int. Cl. H01s *3/08*
U.S. Cl. 331—94.5 **3 Claims**



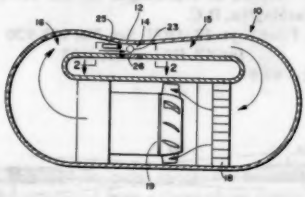
A laser cavity configuration which enables a single laser medium (gas, liquid or solid) to give an output at least one wavelength from one end of the laser and another output at different wavelengths from the other end of the laser. Disclosed are several well known laser media which are capable of simultaneous laser oscillation at two or more wavelengths. Mirrors which are highly reflective at one of such wavelengths and highly transmissive at another of such wavelengths can be prudently selected to resonate the emission from an active medium. If each of the two mirrors thus required are optimized for reflectivity at one of the wavelengths and transmissivity at the other, the desired effect will result.

3,772,610

ARCLESS ELECTRODE CONSTRUCTION FOR GAS TRANSPORT LASER

Jack D. Foster, Los Altos; Russell F. Kirk, and Frederick E. Moreno, both of Sunnyvale, all of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Sept. 20, 1972, Ser. No. 290,545
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 **11 Claims**



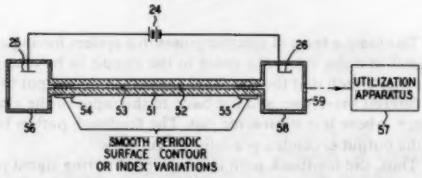
Arcing in the continuous electric discharge of a gas transport laser induced by instabilities inherent in a glow discharge in a rectangular cross-section channel is eliminated by mounting an elongated cylindrically tubular cathode in the mainstream transversely of the direction of flow and by disposing a coextensive segmented anode flush with the opposite channel wall and essentially out of the mainstream. The resulting downstream turbulence caused by the cathode provides an electrically homogeneous gaseous mass immediately adjacent the cathode surface which forms a relatively uniform electric current path for supporting a stabilized gaseous discharge across the lasing region. Laminar flow at the surfaces of the anode segments or pads is achieved by flush mounting the pads in the channel wall for further minimizing instabilities in the discharge path.

3,772,611

WAVEGUIDE GAS LASER DEVICES

Peter William Smith, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 27, 1971, Ser. No. 212,605
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 C **3 Claims**



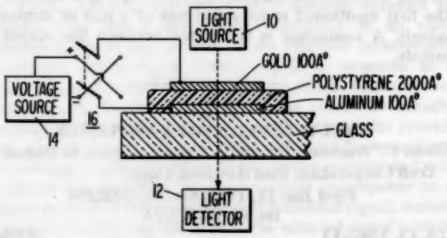
There are disclosed gas lasers in which the light is guided by a hollow dielectric waveguide which also serves to confine the discharge. These lasers are typically designed to have resonators with Fresnel numbers small enough (less than ~0.5) to suppress the dominant free space mode and having sufficient gain for a waveguide mode of oscillation to exist. Each laser has an internal resonator structure and is designed in such a way that the electrical excitation of the gas discharge can be accomplished without interfering with the light guiding properties of the waveguide. Several novel techniques for forming waveguide laser tubes of the required small dimensions are also disclosed. The embodiments include a capillary ring-type configuration that is r.f.-excited, a distributed feedback configuration using periodic changes in waveguide bore cross section, or wall index of refraction, and various rectangular waveguide configurations, for example, two flat glass plates spaced at the edges by two thin-film strips.

3,772,612

LIGHT MODULATOR

Robert Allen Gange, Belle Mead, N.J., assignor to RCA Corporation

Filed May 13, 1971, Ser. No. 143,089
Int. Cl. H01s *3/12*
U.S. Cl. 332—7.51 **3 Claims**



A metal-insulator-metal device formed of materials such as gold, polystyrene and aluminum. In response to the applica-

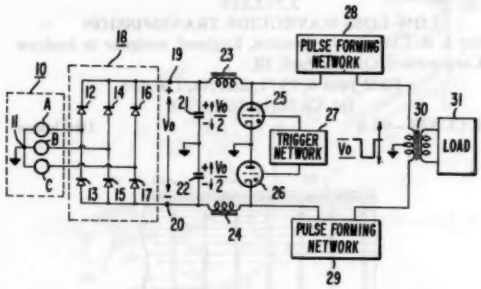
tion to the device of a forward voltage for a relatively long time interval, gold ions and electrons migrate from the gold and aluminum regions respectively and become trapped in the polystyrene. Upon removal of the voltage, the device acts as a light attenuator in a given light frequency range. The device may be switched to a second condition in which it is relatively transparent to light by applying thereto a relatively shorter duration, lower amplitude voltage pulse and also can be switched back to its light attenuating condition.

3,772,613

BALANCED LINE TYPE PULSER CIRCUIT

William Irving Smith, Burlington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 287,722
Int. Cl. H03k *7/00*
U.S. Cl. 332—12 9 Claims



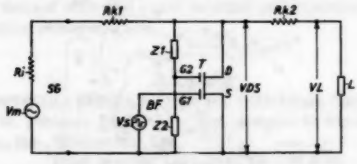
A line type pulser circuit wherein a balanced supply source is used to charge a pair of pulse forming networks to equal potentials but opposite polarities via separate current charging circuits. The pulse forming networks are then discharged simultaneously into the primary winding of an output transformer. The secondary winding of the transformer is connected to a load requiring pulses of energy.

3,772,614

MODULATOR, INCLUDED IN A CARRIER FREQUENCY SYSTEM WHEREIN THE CARRIER SIGNAL PERIODICALLY INTERRUPTS THE INFORMATION SIGNAL DURING THE MODULATION PROCESS

Sven Erik Kjaersgaard, Skarholmen, Sweden, assignor to Telefonaktiebolaget L. M. Ericsson, Stockholm, Sweden

Filed May 11, 1972, Ser. No. 252,282
Claims priority, application Sweden, May 27, 1971, 6848/71
Int. Cl. H03c *3/22*
U.S. Cl. 332—16 T 10 Claims



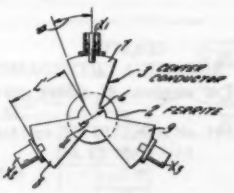
The present invention relates to a modulator for use in the carrier frequency techniques. The modulator includes a voltage controlled impedance element with two control electrodes, as for example a dual gate field effect transistor, in order to carry out a modulation of a carrier frequency voltage with an information signal voltage. The carrier frequency voltage is applied to one of the control electrodes of the impedance element and the information signal is applied via a resistor to the output electrodes of the element. In order to reduce the disturbing influence of the second side-band components in the frequency spectrum of the modulated signal, a voltage divider is connected across the output electrodes of the impedance element, one point on this voltage divider being connected to the second electrode of said impedance element.

3,772,615

WIDE-BAND CIRCULATOR

Yutaka Nishiyama, Ichikawa, Japan, assignor to TDK Electronics Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 17,528, March 9, 1970, abandoned. This application Nov. 19, 1971, Ser. No. 200,529
Claims priority, application Japan, Mar. 29, 1969, 44/27590
Int. Cl. H01p *1/32, 5/12*
U.S. Cl. 333—1.1 3 Claims



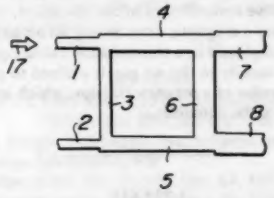
A wide-band circulator employing a Y-shaped stripline conductor having a generally circular center section and a plurality of symmetrically spaced, generally sector-shaped arms extending radially from the center section, in a preferred embodiment each sector-shaped arm subtending an angle 2θ where θ can vary between 17.5° and 27.5°. The circulator futher includes a disk-shaped ferrite plate on each side of the stripline conductor and an outer conductor covering each ferrite plate.

3,772,616

ELECTRIC POWER DIVIDER HAVING FUNCTION OF IMPEDANCE TRANSFORMATION

Katsuyuki Imoto, Sayama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 10, 1972, Ser. No. 296,023
Claims priority, application Japan, Oct. 11, 1971, 46/79482
Int. Cl. H01p *5/14*
U.S. Cl. 333—9 3 Claims



A high frequency circuit arrangement having function of both impedance transformation and electric power division comprising first, second, third and fourth strip lines each having a length of a quarter of the wavelength of a transmitted signal which are connected in sequence to form a closed loop, and four branch lines each of which is connected to each of the junction points of the first, second, third and fourth strip lines, wherein the characteristic impedances of the first strip

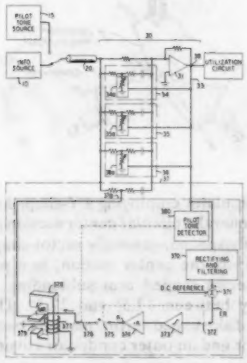
line and the branch lines connected to both ends of the first strip line are equal to each other, the characteristic impedances of the second and fourth strip lines are equal to each other, the characteristic impedances of the branch lines connected to both ends of the third strip line are equal to each other, and the characteristic impedances of the second and fourth strip lines are one half the square root of the characteristic impedance of the third strip line.

3,772,617

METHOD AND ARRANGEMENT FOR SETTING THE REMANENT FLUX DENSITY IN MAGNETIC CIRCUITS AND EQUALIZER UTILIZING SAME

Albert John Ciesielka, Atlantic Highlands, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 2, 1972, Ser. No. 303,137
Int. Cl. H04b *3/04*; **H01f** *13/00*
U.S. Cl. 333—18 **15 Claims**



The remanent flux density in a selected portion of a magnetic circuit is precisely set to a desired value by comparing the flux density in the selected portion to a predetermined reference, generating an error signal based on the comparison, integrating the error signal, and inducing an H field in the magnetic circuit in accordance with the integrated error signal. Integration of the error signal is performed only when the flux density has a substantially remanent value, i.e., only when the H field in the magnetic circuit is substantially zero. Thus, error in setting the flux density due to imperfect remanence in the magnetic circuit is substantially eliminated.

In an illustrative embodiment of the invention, the magnetic circuit comprises a magnetic core having an air gap, and is advantageously employed in a transmission cable equalizer. The remanent flux density in the air gap is utilized to precisely set the resistance value of a magnetoresistor, which in turn determines the gain of the equalizer.

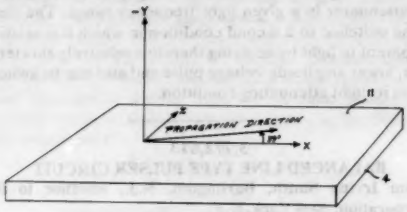
3,772,618

LOW VELOCITY ZERO TEMPERATURE COEFFICIENT ACOUSTIC SURFACE WAVE DELAY LINE

Andrew J. Slobodnik, Jr., Burlington, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 15, 1972, Ser. No. 315,746
Int. Cl. H03h *7/10, 9/00, 9/30*
U.S. Cl. 333—30 R **1 Claim**

An acoustic surface wave delay line having a single crystal tellurium dioxide substrate member the acoustic surface wave propagation surface of which substantially coincides with a



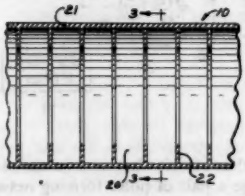
plane defined by the Euler angles Lambda = 0°, Mu = 90°, and Theta = 39°.

3,772,619

LOW-LOSS WAVEGUIDE TRANSMISSION

Peter J. B. Clarricoats, London, England, assignor to Andrew Corporation, Orland Park, Ill.

Filed June 4, 1971, Ser. No. 150,035
Int. Cl. H01p *3/12, 1/16*
U.S. Cl. 333—95 R **10 Claims**



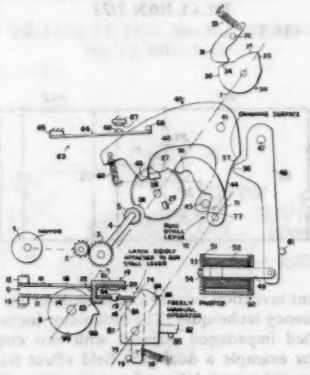
High-frequency signals are transmitted with very low energy loss in corrugated generally circular waveguide employing the hybrid HE_{11} mode of transmission. Guide parameters for production of lowest losses are described.

3,772,620

CONDITION CONTROL DEVICE AND SYSTEM

John L. Harris, Clearwater, Fla., assignor to Deltrol Corp., Bellwood, Ill.

Division of Ser. No. 133,077, April 12, 1971, Pat. No. 3,716,720. This application Aug. 23, 1972, Ser. No. 283,110
Int. Cl. H01h *7/14*
U.S. Cl. 335—63 **4 Claims**



A solenoid operated device includes a camming linkage between the solenoid plunger and a member actuated

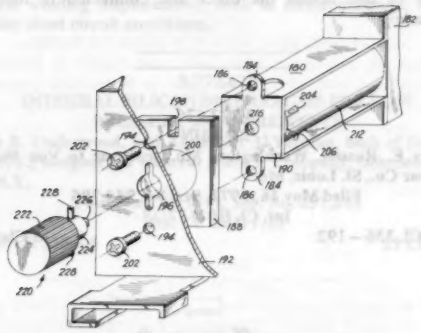
thereby. This camming linkage is characterized to provide a reduced load on the plunger at its starting position and to increase the load as the plunger pulls in.

3,772,621

MANUALLY ACTUABLE SOLENOID OPERATED SWITCH APPARATUS

Paul V. DeLuca, Port Washington, N.Y., assignor to Porta Systems Corp., Roslyn, N.Y.

Division of Ser. No. 50,248, June 26, 1970, Pat. No. 3,700,824.
This application Sept. 22, 1972, Ser. No. 291,355
Int. Cl. H01h 3/02
U.S. Cl. 335—186 **8 Claims**



A manually actuable solenoid operated switch apparatus especially for use in conjunction with cutover transition apparatus for effecting transitional switching of telephone subscriber lines. The solenoid operated switch apparatus comprises a base portion housing a plurality of contact pairs and a coil wound solenoid, a frame which includes an opening formed in the top portion thereof with the opening disposed in superposed spaced coaxial relationship with the solenoid. A spacer member is positioned between the top portion of the frame and a cover member which is secured to the frame. The cover and spacer members are provided with openings formed therein which are in coaxial alignment with the opening formed in the top portion of the frame and a dust cover is interposed between the top portion of the frame and the spacer member in surrounding relationship to the coaxial openings thereof. A separable key member is provided for insertion into the aforementioned coaxially aligned openings by piercing said dust cover thereby causing manual activation of the solenoid and actuation of said contact pairs, whereinafter rotational movement of said key member effects locking engagement thereof with said cover member and continued manual activation of said solenoid.

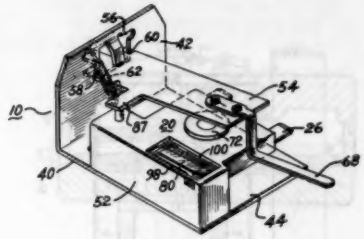
3,772,622

INTEGRATED ELECTRICAL CONTROL DEVICE

Dean W. Johnson, Mishawaka, Ind., assignor to Burcliff Industries, Inc., Mishawaka, Ind.

Filed Jan. 26, 1972, Ser. No. 220,938
Int. Cl. H01h 50/04
U.S. Cl. 335—202 **8 Claims**

An integrated electrical control device in which an electrical coil and connectors therefor are embedded in a body of plastic or other relatively rigid nonconducting material, and a switch disposed in a cavity in said body interconnects said conductor members and is adapted to be operated by an armature held by the core of said coil. The switch may consist of a leaf spring rigidly connected to one of said conductor members and yieldably connected to the other of the conductor members, and is operated by the operation of said armature



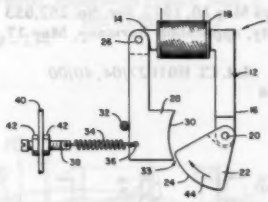
through a stem extending inwardly into the body to the switch. The coil and conductor members are molded integrally with the plastic body.

3,772,623

ELECTROMAGNETIC ACTUATOR ASSEMBLY

Robert W. Nordin, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Nov. 12, 1971, Ser. No. 198,202
Int. Cl. H01f 7/14
U.S. Cl. 335—253 **4 Claims**



A rotary solenoid has a movably mounted pole member which is positioned adjacent to the path of a rotatably mounted armature of the solenoid. The pole member is normally spring biased away from the path of the armature. The armature moves, when energized, from its normal de-energized position toward the pole member along its rotary path past the pole member. When the moving armature is positioned substantially opposite the pole member, the magnetic forces between the pole member and the armature overcome the normal spring bias of the pole member. As a result the pole member moves toward the armature to engage the armature and to arrest its motion.

3,772,624

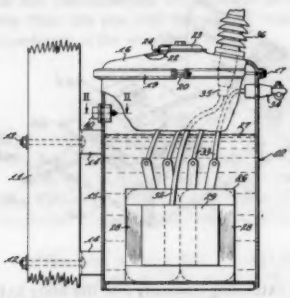
ELECTRICAL DISTRIBUTION TRANSFORMER HAVING PRESSURE RELIEF MEANS

Thomas H. Keogh, Pittsburgh, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation of Ser. No. 97,144, Dec. 12, 1970, abandoned, which is a continuation-in-part of Ser. No. 887,162, Dec. 22, 1969, abandoned. This application May 5, 1972, Ser. No. 250,837
Int. Cl. H01f 27/08
U.S. Cl. 336—55 **10 Claims**

High internal pressure within a distribution transformer casing caused by an incipient fault or thermal overload is a hazard to the lineman, and the transformer is provided with a pressure relief valve which opens automatically to limit the total pressure rise within the casing or may be actuated manually by

the lineman to vent the casing even though the internal pressure is below the operating level of the relief device. A die cast plug alternatively may be used to seal the transformer casing



or may be formed in a simple machining operation into the pressure relief device valve body with an integral valve seat and an integral valve stem guide.

3,772,625

TRANSFORMER FOR PRODUCING OR MEASURING HIGH AND VERY HIGH POTENTIALS OR FOR MEASURING CURRENTS AT HIGH POTENTIALS IN CASCADE CONNECTION

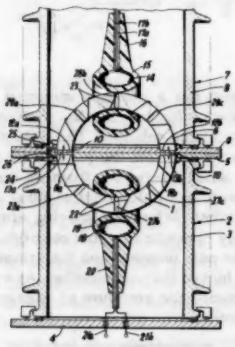
E. H. Friedrich Raupach, Wildensorger Strasse 9, Bamberg, Germany

Filed May 10, 1972, Ser. No. 252,053

Claims priority, application Germany, May 17, 1971, P 21 24 345.8

Int. Cl. H01f *27/04, 40/00*

U.S. Cl. 336—94 **16 Claims**



The transformer includes an iron core with low voltage and high voltage windings, or high voltage winding parts which are spaced from each other and connected by coupling windings. The iron core is constituted by two substantially identical iron core halves arranged with corresponding end faces in facing relation with each other. Each iron core half carries respective windings, and two separate casings are provided, each enclosing a respective iron core half and its associated windings. Each casing has an inner end wall and the cases are alignable with the inner end walls superposed in surface-to-surface engagement to define an interspace or gap separating facing corresponding end faces of the iron core halves. The dimensions of the gap are determined by the combined thickness of the inner end walls at the areas thereof aligned with the end faces of the iron core halves. The thicknesses of the end walls, at these areas which correspond to the cross-sections of the iron core parts, are reduced in accordance with the desired dimensions of the gap between the two iron cores. The inner end walls of the casings may be formed of non-magnetic material or of non-conductive material, and the side walls of the casings comprise insulating jackets with the interior of the casings being filled with a liquid or gaseous insulating medium. When used as a current transformer, particularly a linearized current transformer, the two core halves are provided with additional air gaps preferably distributed uniformly along each core half. Each casing may contain several iron core parts with each core part of one casing being provided with one secondary winding and with the parts being provided with one half of the coupling winding, while the iron core parts of the other casing are provided with the other half of the coupling winding and with a common primary winding. The transformer may comprise one unit of a multi-unit cascade-type voltage or current transformer in which the units are arranged one above the other or one beside the other and connected to form a cascade.

3,772,626

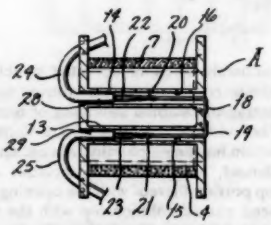
BOBBIN

Leroy E. Russell, Washington, Mo., assignor to Von Weise Gear Co., St. Louis, Mo.

Filed May 16, 1972, Ser. No. 253,795

Int. Cl. H01f *27/28*

U.S. Cl. 336—192 **5 Claims**



An electrical motor stator bobbin integrally formed of electrical insulating material having relatively enlarged end flanges and intervening sleeve or core for receiving thereabout the electrical winding. Said bobbin is provided with tubular members extending between said flanges and opening at its ends therethrough for receiving therein the ends of the winding and the joined portions of the coil leads. The flanges are provided with an arrangement of openings so that the leads may extend outwardly from the same flange or from opposite flanges.

3,772,627

SHOCK-ABSORBING SPRING CLAMP FOR ELECTRIC INDUCTION APPARATUS

Stanley H. Wilk, Dalton, and Bernard W. Lord, North Adams, both of Mass., assignor to General Electric Company, Pittsfield, Mass.

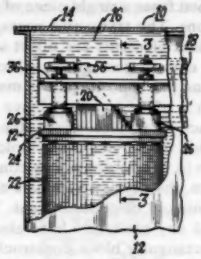
Filed Sept. 1, 1972, Ser. No. 285,723

Int. Cl. H01f *27/30*

U.S. Cl. 336—197 **4 Claims**

An improved clamping means for retaining in position the windings of liquid-immersed electric induction apparatus of the high current type. Shock-absorbing spring clamps interposed between one end of power transformer windings and a portion of the frame resiliently exert a follow-up clamping

force on the windings under steady state conditions and resist by dashpot action any transient or shock force tending to



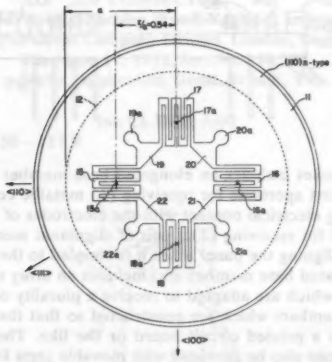
cause winding displacement, such as electromagnetic force under short circuit conditions.

3,772,628

INTEGRAL SILICON DIAPHRAGMS FOR LOW PRESSURE MEASUREMENTS

Joe B. Underwood, and Alexander J. Yerman, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 30, 1972, Ser. No. 257,539
Int. Cl. G01l 1/22
U.S. Cl. 338—4 **11 Claims**



A restrained-edge silicon diaphragm has a high area-to-thickness ratio for measuring low fluid pressures and develops both bending and membrane stresses. To obtain a linear output voltage in a circular diaphragm, the active gages in a half-active or fully-active resistance bridge are located at the unique radial position $r/a = 0.54$ at which the strain is substantially linear. Improved linearity in another gage pattern with central and outer gages is obtained by locating the outer gages near the edge.

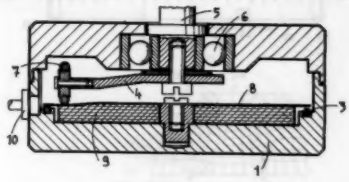
3,772,629

POTENTIOMETER

Andre Meylan-Rochat, Le Brassus, Switzerland, assignor to Parechoc S.A., Vaud, Switzerland

No Drawing. Filed Sept. 19, 1972, Ser. No. 290,348
Claims priority, application Switzerland, Sept. 20, 1971, 13740/71; Germany, May 9, 1972, P 22 23 409.9
Int. Cl. H01c 5/00
U.S. Cl. 338—154 **7 Claims**

A potentiometer comprising a slider and a resistance presenting a conductive track, as well as an intermediary member having the shape of a resiliently deformable sheet interposed between the slider and the conductive track, at least a portion of this sheet, situated opposite the track, being conductive, wherein the sheet rests on a cushion made of flexible



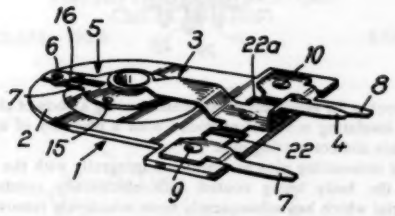
and compressible material which maintains it at a distance from the conductive track and which is elastically deformed under the effect of the pressure exerted on the sheet by the slider, so that the portion of the sheet adjacent the slider comes in contact with the track.

3,772,630

VARIABLE POTENTIOMETER

Eugenio Falco, 13 Avenue Taillebourg, Paris, France

Filed Aug. 23, 1971, Ser. No. 173,993
Claims priority, application France, Sept. 7, 1970, 7032440
Int. Cl. H01c 9/02
U.S. Cl. 338—174 **9 Claims**



The invention relates to a variable potentiometer comprising an insulating base with a resistive track connected to terminal tags. A slider carrying a contact stud in engagement with the track is rotatable about an annular surface of a collector, the latter being secured to the base by a central annular portion of eyelet form. The slider is movable between limit stops on the collector.

3,772,631

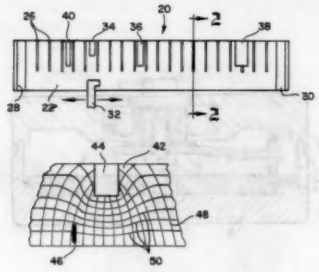
RESISTOR AND METHOD OF MAKING AND TRIMMING SAME

Alex B. Owen, Wallingford, Pa., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Aug. 12, 1969, Ser. No. 849,332
Int. Cl. H01c 9/02
U.S. Cl. 338—195 **10 Claims**

An improved resistor such as found in potentiometers and rheostats is disclosed as well as the method of manufacturing such resistors and the method of trimming such resistors. A preferred embodiment of the resistor is structured with a re-

sistive film deposited upon a substrate. A number of closely spaced electrically conductive segments are deposited upon



the resistive film for reducing electrical distortion caused by trimming and manufacturing anomalies.

3,772,632

MANUFACTURE OF ELECTRIC COMPONENTS

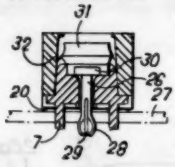
Graham Ratcliff, Sevenoaks, and Ronald Sidney Thomas Kemp, Coulsdon, both of England, assignors to Thomas Jermyn, Sevenoaks, Kent, England

Filed Apr. 6, 1972, Ser. No. 241,521

Claims priority, application Great Britain, Apr. 23, 1971, 11,079/71; Nov. 29, 1971, 11,079/71

Int. Cl. H05k *1/02*

U.S. Cl. 339—17 CF **14 Claims**



A socket for electrical components having a body of electrically insulating material provided with a plurality of socket recesses and connecting pins.

The connecting pins are moulded integrally with the body with the body being coated with electrically conductive material which has subsequently been selectively removed to leave conductive material upon the connector pins and in the recesses to provide electrical connections, the coating of the connector pins being individually electrically connected by coating material to respective socket recesses.

3,772,633

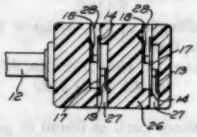
MULTIPLE SERVICE EXTENSION CORD

Paul P. Danesi, Attleboro Falls, Mass., assignor to Cable Electric Products, Inc., Providence, R.I.

Filed Mar. 20, 1972, Ser. No. 235,972

Int. Cl. H01r *11/18, 13/54*

U.S. Cl. 339—28 **4 Claims**



The device comprises a conventional multiple service extension cord in which the multiple service tap is reduced to a minimum size of a small rectangular block. Further savings are accomplished by providing a single pair of contact elements for receiving a pair of male contact plug elements from opposite directions. The contact elements are designed so that they can be stamped from a single piece of stock requiring no assembly operations. The transverse passageways for receiving the male contact elements are offset so that one pair of contact elements enter a passageway which leads below the service contacts and the opposite pair of male contacts enter a passageway which is offset to swing above the contacts. This results in a reduction in size. Since the plastic dielectric material from which the service tap is molded is fairly expensive, the reduction in weight results in a considerable saving in costs. Furthermore, the contact elements also are reduced to an irreducible minimum of contact areas. This is also an expensive metal and any reduction here also results in a cost reduction. The rectangular block construction permits safety in that the block can be stepped on without injuring the parts.

3,772,634

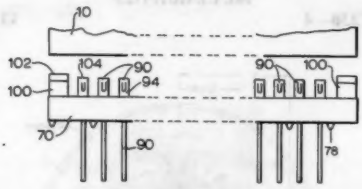
MOUNTING BRACKET FOR DISPLAY PANEL

William M. Hennessey, Somerville, and Hector R. Schorno, Rockaway, both of N.J., assignors to Burroughs Corporation, Detriot, Mich.

Filed May 15, 1972, Ser. No. 253,350

Int. Cl. H01r *13/62*

U.S. Cl. 339—65 **25 Claims**



The bracket includes an elongated base member having a series of first apertures for receiving (1) metallic connectors for making electrical contact with the electrodes of a display panel, and for receiving (2) a pair of alignment members for properly aligning the panel when it is coupled to the bracket. The elongated base member also includes an array of second apertures which are adapted to receive a plurality of vertical support members which are constructed so that they can be secured to a printed circuit board or the like. The vertical members can also be provided with movable arms for engaging and holding the display panel. The base member and the upright members are designed so that two base members can be connected together in series, and they can be held together mechanically by an upright member which engages both base members simultaneously.

3,772,635

UNIVERSAL MINIATURE CONNECTOR FOR PLURAL CONDUCTORS

Dean Rudisill Frey, Dover; Robert Walter Henn, Bridgewater Twp., Somerset Cty.; Donald Tolman Smith, Piscataway Twp., Middlesex Cty., and Arthur Guntis Vedejs, Morris Twp., Morris Cty., all of N.J., assignors to Bell Laboratories Incorporated, Murray Hill, N.J.

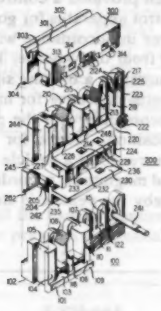
Filed Dec. 22, 1971, Ser. No. 210,750

Int. Cl. H01r *9/08, 3/00*

U.S. Cl. 339—99 R **32 Claims**

The connector is a basic-splice unit of three parts: an index strip, a connector module, and a cap. The index strip has alternately peaked and flat indexing teeth which help split the wire pairs. The strip acts as a temporary wire holder when dressing in wires to be joined. The connector module contains a double-ended slotted contact element. The module top is

similar in design to the index strip top and performs the same functions. The module has two rails along its length which accommodate an optional bridge-connector block. The connector module snap-mounts to the indexing strip. In this process the slotted beam contact element penetrates the insulation



and makes contact to the wire while the connector module bears down on the wire on each side of the contact element to firmly snug it in place. Between each tooth of the index strip, a cantilever beam forces the wire against a snubbing brace of the connector module, deflecting differing amounts depending on the wire gauge.

3,772,636

CONNECTOR

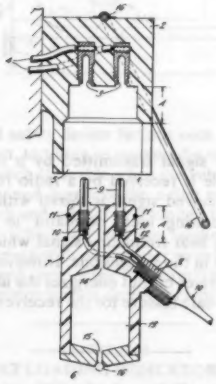
Alan David Webb, Hinchley Wood, England, assignor to The British Petroleum Company Limited, London, England

Filed Jan. 17, 1972, Ser. No. 218,305

Claims priority, application Great Britain, Feb. 4, 1971, 3,886/71

Int. Cl. H01r *3/00*

U.S. Cl. 339—117 R **6 Claims**



An underwater connector for connecting electrical cables consists of a plug and socket. The connector operates when it is oil filled, the socket having a reservoir in its body filled with oil with the opening of the body facing down, there is a metal depression in the reservoir connected to one cable. The plug has a hollow body and a metal projection connected to the other cable which fits into the socket body. When the plug is inserted into the socket the oil in the socket reservoir is forced into the reservoir in the plug body and electrical contact between the plug and socket is made without any water coming in contact with the electrical contact in the socket.

3,772,637

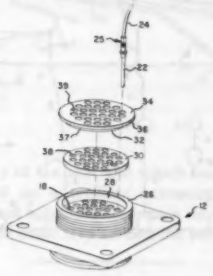
DEVICE FOR SEALING ELECTRICAL CONNECTORS

Clarence Leonard Paullus, Lewisberry, and Larry Ronald Stauffer, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 16, 1972, Ser. No. 226,689

Int. Cl. H01r *13/52*; **B25b** *27/02*

U.S. Cl. 339—102 R **3 Claims**



This invention relates to a device and method for sealing openings such as found on the rear faces of electrical connectors from which a number of electrical leads emanate. More particularly, the invention relates to a layer of sealable material attached to a rigid member to form a disk which can be pressed into a recess in the rear face of a connector, the pressure causing the material to flow into passageways and openings and sealing the electrical leads therein.

3,772,638

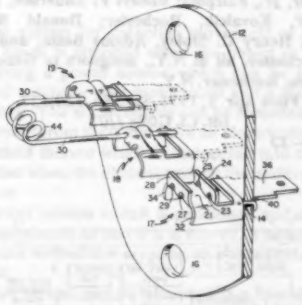
WIRE CONNECTOR

Harold J. Schoelles, Framingham, Mass., assignor to Ark-Les Switch Corporation, Watertown, Mass.

Filed July 13, 1972, Ser. No. 271,285

Int. Cl. H01r *9/00*

U.S. Cl. 339—198 R **8 Claims**



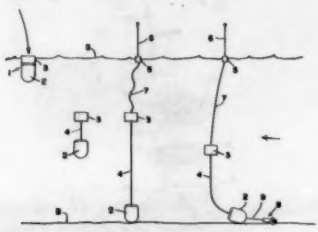
A terminal assembly comprising a terminal board of flat sheet insulating material with a plurality of metallic electric wire connectors mounted thereon having on one pair of opposite sides a pair of spaced, opposed, generally flat clamping tabs and on the other pair of opposite sides a pair of side extensions interconnected to provide an end extension including an electrical connecting member. The tabs each have at least one wire receiving aperture closely adjacent the base which has a portion extending between the apertures in opposite tabs. The apertures in opposite tabs are aligned with one another for the insertion of a wire thereinto to be gripped and clamped between the tabs and the base portion upon bending of the tabs toward one another into substantial parallelism with the base portion.

3,772,639

SONOBUOY MOORING UNIT

Robert M. Snyder, Jupiter, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 24, 1972, Ser. No. 274,551
Int. Cl. G01s 1/72
U.S. Cl. 340—2 3 Claims



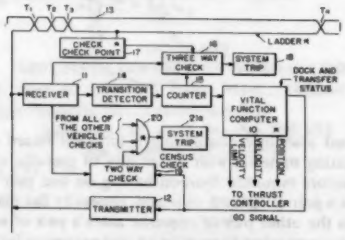
An air-dropped sonobuoy assembly comprising a weighted mooring unit, a submergible buoy carrying hydrophones, and a float with a radio antenna; the mooring unit being separable from the other elements (after reaching a given depth when dropped in the sea) for mooring cable payout and rapid descent to the sea bottom where further cable payout is prevented. At this point a mooring cable-winch in the buoy reels in the cable to lower the buoy to desired operating depth. The specific mooring cable securing mechanism permits rapid payout of cable until the mooring unit bottoms and then quickly locks the cable against further payout so the winch can pull the buoy down to desired depth against the weight of the mooring unit. The mooring unit also contains an auxiliary anchor device which is deployed upon bottoming of the mooring unit.

3,772,640

VEHICLE CONTROL SYSTEM WITH VEHICLE LOCATION ERROR CHECKING MEANS

John H. Auer, Jr., Fairport; Robert F. Anderson, Rochester; Vincent P. Kovalcik, Rochester; Donald B. Marsh, Rochester; Henry C. Sibley, Adams Basin, and Willis R. Smith, Rochester, all of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,127
Int. Cl. G08g 1/01
U.S. Cl. 340—23 6 Claims



A system for controlling the operation of a vehicle along the right of way from a remote wayside location has a first means including a ladder transmission line, or wiggle wire, along the wayside for determining the location of the vehicle by counting energy pulses generated by passage of the vehicle over transpositions, or steps, in the wiggle wire. A second means including spaced wayside markers delivers a signal intermittently determining location of the vehicle while a control means for generating a signal permitting the vehicle to proceed has been provided only if location of the vehicle as determined by the first and second means is substantially the same upon the passage of each of the markers.

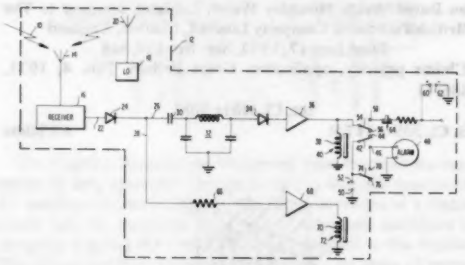
There has also been provided a control system including a vehicle function control apparatus for governing the mode of vehicle tractive power in accordance with appropriate command signal profiles from the wayside. The improvement includes means for generating a braking signal profile included in the control apparatus operative for initiating a reversal of tractive power in accordance with the position relative to a selected stopping position. Means for decoupling tractive power upon the occurrence of a vehicle speed and deceleration of predetermined magnitude, according to the profile, has been provided whereby the vehicle is stopped at the desired position.

3,772,641

SELF-TESTING EMERGENCY AUTOMOTIVE WARNING SYSTEM

Harry W. Grosser, 1309 Forest Ave., Jamestown, N.Y.; William L. Fehlman, 168 Work St., Falconer, N.Y., and Duane Carlson, 71 Pennsylvania Ave., Jamestown, N.Y.

Filed Mar. 31, 1972, Ser. No. 239,979
Int. Cl. G08b 3/10
U.S. Cl. 340—33 4 Claims



An emergency signal transmitted by a transmitter in an emergency vehicle is received by a radio receiver in an automobile. The received signal is mixed with the output of a continuously operating local oscillator to produce at the receiver output a beat frequency signal which is detected to energize an alarm in the automobile. However, the absence of a signal at the receiver output energizes the alarm to provide a self-testing or fail-safe feature for the receiver.

3,772,642

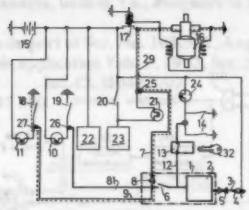
WARNING DEVICE FOR MOTOR VEHICLES

Arno Willi Schlorke, Schlorke's Garage (Pty.) Ltd., 355 Potgieter St., Pretoria, Republic of South Africa

Filed Apr. 7, 1971, Ser. No. 132,085
Claims priority, application South Africa, Apr. 24, 1970, 70/2747
Int. Cl. B60q 5/00; B60r 25/10
U.S. Cl. 340—52 F 5 Claims

A sound warning apparatus for motor vehicles to warn by audible alarm of a faulty oil pressure, water temperature, electric generator or of unauthorised entry. One buzzer is parallel connected to existing indicator lights in the vehicle directly

but to the generator with a rectifier interposed in series. The rectifier makes it possible to have a single buzzer only, potentially energised by all the causes mentioned, by virtue of the fact that the rectifier prevents a potential short circuit condition arising.

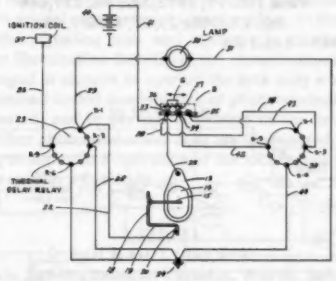


3,772,643

TILT-ACTUATED SAFETY DEVICE

Everett A. Dodd, St. Louis, Mo., and Laurance J. Horan, 18 S. Kingshighway, St. Louis, Mo., assignors to said Horan, by said Dodd

Filed Mar. 6, 1972, Ser. No. 231,995
Int. Cl. G08b *21/00*
U.S. Cl. 340—52 H 10 Claims



A tilt-actuated safety device for use with vehicles or other equipment subject, to tilting or canting during operation comprising a main switch closeable when the vehicle or the like attains a predetermined degree of tilt, a first relay connected to said master switch and subject to a limited time delay closing for opening the vehicle or the like ignition system, and a second relay connected to said master switch and subject to a relatively increased time delay for permitting reenergization of said vehicle ignition system during such delay.

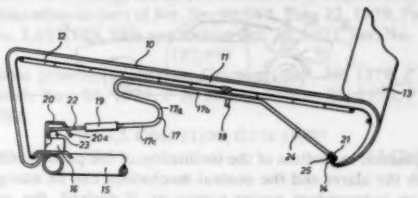
3,772,644

VEHICLE SEAT LOADING INDICATOR APPARATUS

Dieter Hanselmann; Willy Bock, and Hans Prohaska, all of Bietigheim, Germany, assignors to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH, Bietigheim, Germany

Filed Apr. 10, 1972, Ser. No. 242,338
Claims priority, application Germany, Apr. 15, 1971, P 71 14 410.0
Int. Cl. B60r *21/10*
U.S. Cl. 340—52 R 10 Claims

A device for indicating the loading of a seat, particularly a passenger seat in a motor vehicle comprises, a car seat having a resilient spring suspension for supporting a person and a switch for indicating the loading of the seat by the person located adjacent said spring suspension. The spring suspension carries resilient actuating means in the form of a resilient actuating element which is suspended from the horizontally extending portion of the spring suspension at a location underlying the upholstery of the seat and which has an actuator end which is engaged on a resilient actuating element of the switch. The resilient actuating element is movable when a person sits on a seat to cause it to actuate the switch.

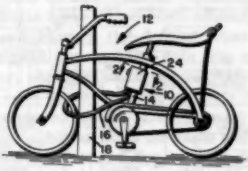


3,772,645

VEHICLE ALARM SYSTEM

Lawrence Odenz, Costa Mesa, and Donald D. Kane, Long Beach, both of Calif., assignors to T.P.S., Inc., Costa Mesa, Calif.

Filed Jan. 20, 1972, Ser. No. 219,229
Int. Cl. B60r *25/10*
U.S. Cl. 340—65 8 Claims



An alarm system for detecting movement of an object to which the alarm is attached when the object or the alarm is moved, having a power source which can be a battery, an audio signal means, a detection circuit and a gimbled trip or motion switch. The alarm system can be mounted on a device to be protected from theft and have an electrically conductive chain attached thereto which is connected into the detection circuit so that when the chain is broken the audio signal means will function.

The gimbled motion switch is positioned and connected to the detection circuit so that if it is moved, it will cause the detection circuit to function creating an alarm in the form of an audio signal.

The entire system can be mounted in a closed locked box which is attached to a valuable object which is to be protected such as a bicycle, business machine or storage box.

3,772,646

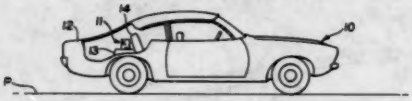
VEHICLE ANTI-THEFT TILT ALARM SYSTEM

Ernest A. Keith, and David E. Keith, both of Cleveland, Ohio, assignors to Corp. (Ltd.), Cleveland, Ohio

Filed June 20, 1972, Ser. No. 264,584
Int. Cl. B60r *25/10*
U.S. Cl. 340—65 10 Claims

Disclosed is an apparatus for detecting changes in the inclination of a vehicle at rest including a suitable alarm which is activated by a sensing mechanism when a change in the inclination of the vehicle is detected. The sensing mechanism has a reference axis which tends to seek a vertical disposition.

A mounting assembly pivotally carries the sensing mechanism and is acted upon by a selectively energized control mechanism to enable the sensing mechanism to seek a vertical



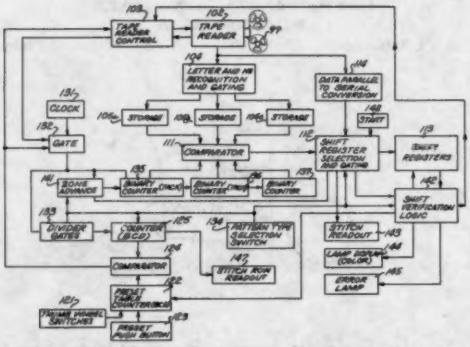
disposition regardless of the inclination of the parked vehicle. Both the alarm and the control mechanism can be energized by an independent power source or, if desired, the power source of the vehicle can be utilized for that purpose.

3,772,647

DATA VERIFICATION FOR ELECTRONIC KNITTING MACHINE

Paul Christiansen, Novelty, Ohio, assignor to The Warner & Swasey Company, Cuyahoga, Ohio

Filed Mar. 29, 1972, Ser. No. 239,058
Int. Cl. D04b 9/26
U.S. Cl. 340—146.1 AB **9 Claims**



The present invention provides a method and apparatus for verifying knitting machine data which has been prepared from a pattern drawing and will be used by an electronically controlled circular knitting machine or by a pin setting machine for setting pins in pattern drums or wheels. The knitting pattern data includes knit and non-knit indications which are stored at memory locations on a suitable memory means such as punched paper tape, magnetic tape, or a magnetic disc or drum Verification is effected by logically examining all of the knit and non-knit instructions for each stitch of each stitchrow of the pattern defined by the knitting pattern data. If the combination of knit and non-knit instructions for a stitch does not conform to the format for the type of fabric to be knitted, then readout devices indicate the stitchrow and stitch number where the error exists.

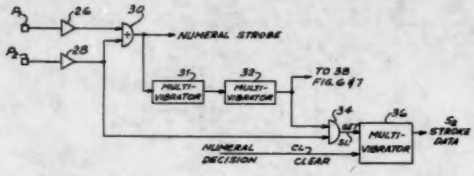
3,772,648

ELECTRO-OPTICAL CHARACTER READER

Arthur Schlang, Woodbury, N.Y., assignor to Isotec Incorporated, Woodbury, N.Y.

Filed June 11, 1971, Ser. No. 152,104
Int. Cl. G06k 9/18
U.S. Cl. 340—146.3 J **7 Claims**

An electro-optical character reader for a font of two dimensional plane characters based on an ideal plane matrix of two mutually perpendicular sets of linear strokes, comprising a linear array of scanning sensor elements disposed to scan one character at a time while the characters move in a direction perpendicular to the array of sensors. A logic circuit converts data pulses corresponding to detected strokes to data bits cor-



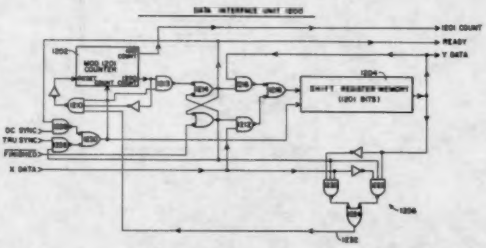
responding to characters scanned. The circuit includes means for detecting beginning and end edges of characters in their path of movement and is adapted to scan alphabetic and numeric characters inscribed in ideal form.

3,772,649

DATA INTERFACE UNIT FOR INSURING THE ERROR FREE TRANSMISSION OF FIXED-LENGTH DATA SETS WHICH ARE TRANSMITTED REPEATEDLY

Donald E. Haselwood, Deerfield, and Carl M. Solar, Glenview, both of Ill., assignors to A. C. Nielsen Company, Chicago, Ill.

Division of Ser. No. 15,696, Mar. 2, 1970, Pat. No. 3,651,471.
Filed Feb. 17, 1972, Ser. No. 227,060
Int. Cl. G08c 25/02; H04l 1/08
U.S. Cl. 340—146.1 BA **3 Claims**



A data interface unit is designed to receive fixed-length data sets which are transmitted repeatedly and which differ from one another only in the reversal of a single data bit between successive transmissions. The data interface unit stores all the bits comprising a first transmitted data set and then compares each of the data bits in the set to the corresponding bit in a subsequently transmitted data set. When a first disagreement between transmitted data bits is found, that disagreement is assumed to be the bit that was reversed in sign and is also assumed to be the start of the data. If all of the bits save that one bit are the same during both transmissions, then an error-free transmission is assumed to have occurred and the data set is accepted. However, if two or more data-bit positions are found to disagree, then the transmission is known to contain at least some errors. The data storage and comparison process is then repeated using subsequent transmissions of the data set. This data interface unit is particularly suitable for collecting data from remote locations over conventional telephone lines with the assistance of automatic dialing equipment. The preferred embodiment of the invention is designed for use in carrying out surveys of the listening habits of television viewers.

3,772,650

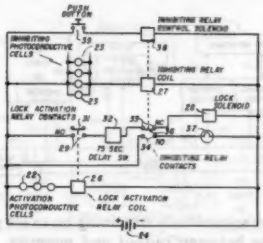
CONTROL AND RESPONSE SYSTEMS AND UNITS

James E. Baskerville, North Springfield, and Charles T. Creekman, Jr., Alexandria, both of Va., assignors to Folger Adams Co., Joliet, Ill.

Continuation-in-part of Ser. No. 168,951, Aug. 4, 1971, abandoned. This application Feb. 1, 1973, Ser. No. 328,868

Int. Cl. H04q *3/02*

U.S. Cl. 340—147 MD 5 Claims



A coded signal system particularly useful for operating locks in a security institution comprising a portable signaling unit capable of activating a number of response units at various lock locations. The signaling unit comprises a matrix of lights in spatial arrangement which are electrically energized by corresponding selectively operable switches according to a different predetermined coded combination for each response unit. Each response unit comprises a matrix of photoconductive cells in spatial arrangement corresponding to that of the lights of the signaling unit and operatively conductive in response to illumination therefrom, the photoconductive cells being arranged in circuits to operate the lock only when all of a predetermined coded combination of photoconductive cells are illuminated, and to prevent activation of the lock whenever any other photoconductive cells are illuminated, thereby preventing unauthorized operation of the lock by use of an external light such as a flashlight.

3,772,651

LOCK-OUT CIRCUIT

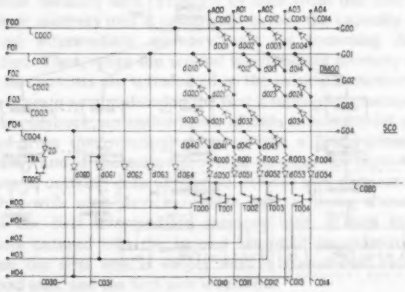
Guido Maria Josepha Benedikt Thyssens, Wilrijk, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

Filed June 21, 1972, Ser. No. 264,980

Claims priority, application Belgium, July 8, 1971, 769661

Int. Cl. H04q *1/00*

U.S. Cl. 340—147 CN 35 Claims



A lock-out circuit enables one out of 250 registers to be connected to one out of a number of translators. Relays used to interconnect the registers and the translators are driven from both ends, so that the number of diodes required in the translators is reduced and a multiple cable through 250 registers is avoided.

3,772,652

DATA STORAGE SYSTEM WITH MEANS FOR ELIMINATING DEFECTIVE STORAGE LOCATIONS

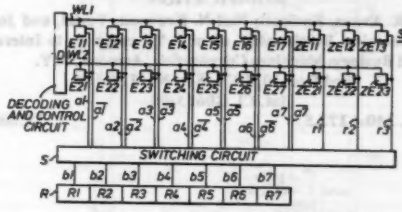
Wolfgang Hilberg, Thalfingen, Germany, assignor to Licentia Patent-Verwaltungs GmbH, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 48,300, June 22, 1970, Pat. No. 3,693,159. This application Oct. 29, 1971, Ser. No. 193,949

Claims priority, application Germany, Oct. 30, 1970, P 20 53 260.9; Nov. 28, 1970, P 20 58 641.8; Nov. 28, 1970, P 20 58 698.5

Int. Cl. G06f *11/00*; G11c *19/00*

U.S. Cl. 340—172.5 12 Claims



A data storage system containing an integrated memory for the storage of words of a given number of bits wherein the memory is constructed so that each word address in the memory is provided with a number of memory elements in excess of the given number of bits of the words to be stored. The unusable memory elements in the memory are identified by means of signals produced during interrogation of a word and circuitry is provided which responds to these signals for directing the data bits into those bit locations containing only usable memory elements during the writing operation and for eliminating the gaps between the data bits as the result of unusable memory elements in certain bit locations of a word address during read out by reading out only the information from usable storage elements. A number of techniques for identifying the unusable memory elements and for storing the information normally destined for an unusable storage element in a usable storage element are disclosed.

3,772,653

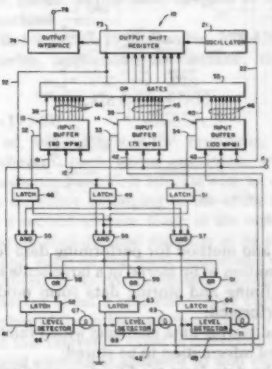
BIT RATE CONVERTER

Vernon E. Brown, Mabelvale, Ark., assignor to Teletype Corporation, Skokie, Ill.

Filed Apr. 21, 1972, Ser. No. 246,314

Int. Cl. G06f *5/06*

U.S. Cl. 340—172.5 9 Claims



A bit rate converter for converting an incoming data signal having an undertermined bit rate to a preselected bit rate for

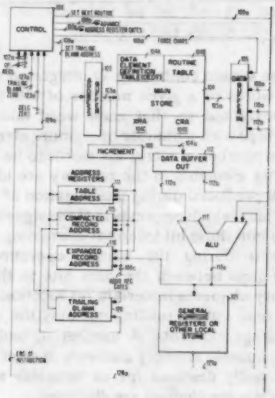
retransmission includes a plurality of input buffers, each responsive to a data signal having a predetermined bit rate. A selected one of the plurality of input buffers, which is responsive to a predetermined bit rate corresponding to the bit rate of the incoming data signal, is enabled to receive and store the data signal. An associated indicator is then activated to show the bit rate of the data signal. The stored data signal is supplied to an output shift register for retransmission at a preselected bit rate which may be equal to or greater than the bit rate of the incoming data signal.

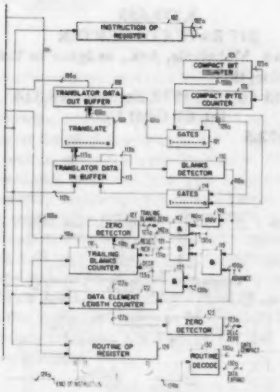
3,772,654

METHOD AND APPARATUS FOR DATA FORM MODIFICATION

James R. Evans, Endicott; Neil N. Krewson, Vestal, and John W. Roossien, Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,358
Int. Cl. G06f *5/00*
U.S. Cl. 340—172.5 **3 Claims**





Apparatus and method for performing data form modification on information to be stored in a large scale storage system including, defining and storing data form modification routines to be performed;

defining and storing data elements which relate to a particular class of information to be stored;

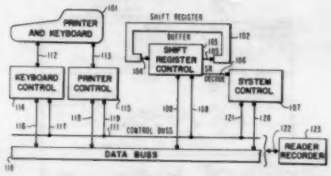
executing the data form modification routines in and under the control of a processing unit which includes registers and counters associated with particular data form modification routines.

3,772,655

METHOD OF OBTAINING CORRESPONDENCE BETWEEN MEMORY AND OUTPUT

Robert G. Bluethman, and Randell L. James, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1972, Ser. No. 229,998
Int. Cl. G06f *3/10*
U.S. Cl. 340—172.5 **2 Claims**



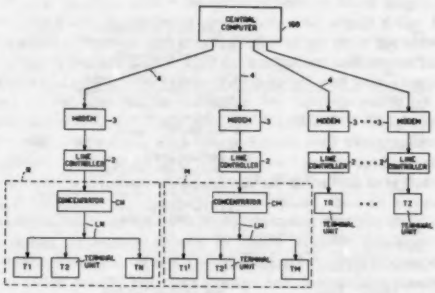
A method for sequentially obtaining an exact point-to-point correspondence between output and memory. The memory will automatically be rearranged in accordance with line length and/or format determinations. The system is comprised of an electronic dynamic shift register and associated control logic, and an input/output device. Control codes stored in the shift register along with text data codes determine the initial format. This format is altered and at the completion of output the memory will correspond to the output. For example, if a stored line length is 100 units defined by carrier return codes and the measure set on an output printer is 80 units, the memory will not correspond to the printed output. With the system of this invention, during an output operation a carrier return code will be inserted into memory at a point in the line less than 80 units from the line beginning and the carrier return code in memory defining the original 100 unit line will be removed.

3,772,656

DATA COMMUNICATION SYSTEM BETWEEN A CENTRAL COMPUTER AND DATA TERMINALS

Francesco Serracchioli, Banchette, and Umberto Steindler, Ivrea, both of Italy, assignors to Ing. C. Olivetti C., S.P.A., Turin, Italy

Filed Jan. 25, 1972, Ser. No. 220,656
Claims priority, application Italy, Feb. 1, 1971, 67326 A/71; June 11, 1971, 68986 A/71
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **14 Claims**

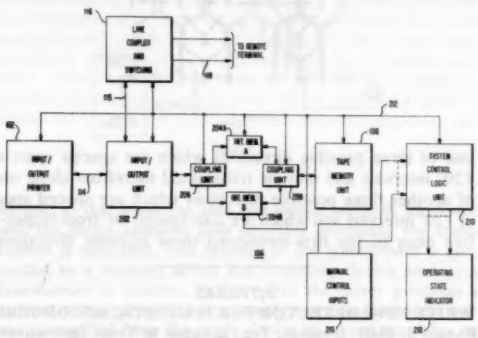


A data communication system between a central computer and data terminals, in which a group of terminals is connected directly to the central computer and another group of terminals is connected to the central computer through a concentrator. The concentrator connects a terminal, which is ready to transmit, to the central computer in such a manner as to be transparent to the flow of the data.

3,772,657
MAGNETIC TAPE DATA HANDLING SYSTEM EMPLOYING DUAL DATA BLOCK BUFFERS

Joseph P. Marsalka, Columbus, and Charles F. Spademan, Worthington, both of Ohio, assignors to MI_2, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 123,187, March 11, 1971. This application Nov. 30, 1971, Ser. No. 203,245
Int. Cl. G06f *3/00, 5/06*
U.S. Cl. 340—172.5 92 Claims



There is disclosed a data handling system including input-output means, intermediate memory means and principal memory means, together with data transfer and processing control logic. Input and output parallel to serial and serial to parallel and code conversion capability are provided. Input-output temporary storage and data processing are provided by the intermediate memory which comprises a pair of random access memory units or the like. The principal memory is a magnetic tape system, preferably employing a magnetic tape cassette as a memory medium. The system is usable in various ways, for example as a data terminal capable of local keyboard and/or remotely controlled data storage and transmission. Data input and output may be in parallel or serial form and a variety of data rates and data code words may be accommodated without system modification.

Broadly stated, for operation in the record mode, the system accumulates data in a first one of the intermediate memory units through the input-output means. When the capacity of the first unit is reached, the entire data block is transferred to the principal memory at a high speed. While data is being transferred to the principal memory from the first intermediate memory unit, data is accumulated in the second intermediate memory unit. Transfer of data from the first intermediate memory unit is completed before the capacity of the second intermediate memory unit for incoming data is reached. Thus, when the second intermediate memory unit is full, its contents are transferred to the principal memory, and data is again accumulated in the first intermediate memory.

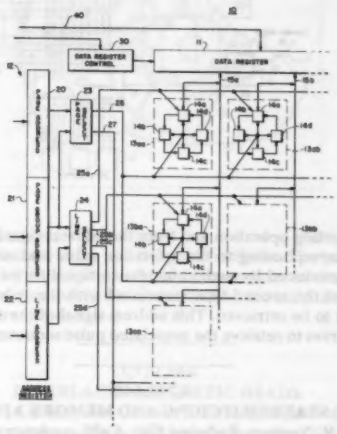
For playback, an entire block of data is transferred at high speed from the principal memory into a first intermediate memory and is thereafter provided through the input-output means to suitable data utilization devices at a data rate compatible with such devices. While data is being transmitted from the first intermediate memory unit, a data block is rapidly entered into the second intermediate memory unit. When the first unit is empty data is transmitted from the second unit, and the first unit is refilled.

Among the features provided by the system are error checking and correction on a character-by-character basis, message identification (search) based on selectable identifying code characteristics and compatibility with a a variety of keyboard controlled devices or other data input and output devices, and automatic and manual data gathering and processing machinery.

3,772,658
ELECTRONIC MEMORY HAVING A PAGE SWAPPING CAPABILITY

Lorenz M. Sarlo, Matawan, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 5, 1971, Ser. No. 112,903
Int. Cl. G11c *19/00*
U.S. Cl. 340—173 R 1 Claim



An electronic memory having a data register, an address register and an array of storage cells. Each cell includes a plurality of two-state devices. The data register is connected to one of the two-state devices in each storage cell for communication therewith. The two-state devices in each storage cell are connected in a ring so that the bits stored therein may be shifted around the ring. The address register includes a line or word address portion. The line address portion selects the group or line of storage cells which are to communicate with the data register. The page address portion selects which of the two-state devices contains the information to be either sensed or changed by the data register and shifts this information to the one two-state device in each storage cell which is connected to the data register.

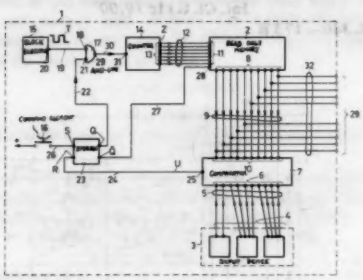
3,772,659
METHOD AND APPARATUS FOR FORMING CERTAIN PULSE SEQUENCES

Hans De Vries, Illnau, Switzerland, assignor to Zellweger AG, Uster, Switzerland

Filed Sept. 12, 1972, Ser. No. 288,420
Claims priority, application Switzerland, Oct. 8, 1971, 014707/71
Int. Cl. G11c *17/00*
U.S. Cl. 340—173 SP 9 Claims

A method of, and apparatus for, producing certain pulse sequences, wherein each pulse sequence which can be produced is associated at a first address with an order number and the pulse sequence belonging to the order number is associated with a second address. Each of the order numbers is stored in binary-coded-decimal notation at its corresponding first address and each of the pulse sequences which can be produced is stored at its corresponding second address. An input device serves to set a reference value corresponding to the order number of the pulse sequence which is desired to be retrieved, and this reference value is delivered to a comparator. A command element is actuated so that clock pulses are delivered to a counter and the counter state or result is delivered as addresses of a first type to the storage. By means of these addresses of a first type there are retrieved the stored

order numbers which are delivered in the form of actual value signals to the comparator. Upon coincidence of an actual value signal corresponding to the order number of the pulse sequence which is to be retrieved with the set reference value signal there is produced a coincidence signal which interrupts



the counting operation and from the address signal of the first type corresponding to the reference value and an additional signal produced by such coincidence signal forms an address signal of the second type associated with the pulse sequence desired to be retrieved. This address signal of the second type then serves to retrieve the associated pulse sequence.

3,772,660

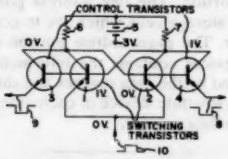
SOLID STATE SWITCHING AND MEMORY APPARATUS

Robert H. Norman, Redwood City, Calif., assignor to Fairchild Camera and Instrument Corporation, Syosset, N.Y.

Division of Ser. No. 263,049, March 5, 1963, Pat. No. 3,562,721. This application July 2, 1969, Ser. No. 838,574

Int. Cl. G11c *11/40, 5/02*

U.S. Cl. 340—174 R **2 Claims**



A memory cell having two transistors, each transistor having two emitters, a base, and a collector; the bases and the collectors of the transistors are cross-coupled; by the application of a first signal to one of the emitters of each of the two transistors simultaneously, and a second signal at the same time to the other emitter of only one of the two transistors, the transistor having the second signal at its emitter is placed in a conducting state so that data is stored in the cell having the actuated emitter.

3,772,661

CONTROL SYSTEM FOR MAGNETIC BUBBLES

Shintaro Oshima, Masashina-shi, Tokyo, Teruji Watanabe, Niza-shi, Saitama-ken, and Hideo Ishihara, Kamakura-shi, Kanagawa-ken, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

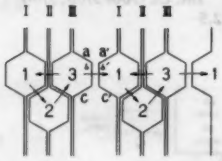
Filed Mar. 31, 1971, Ser. No. 129,705

Claims priority, application Japan, Sept. 30, 1970, 45/85073

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF **12 Claims**

A system for controlling magnetic bubbles in a thin magnetic plate comprises a plurality of drive loops disposed in close relationship to the magnetic plate and driven by polyphase drive currents to effect controlled movement of magnetic bubbles contained in the magnetic plate. The drive loops have a hexagonal shape with six sides so that a magnetic bubble may be accepted by each drive loop along



one of three possible directions which are spaced apart at 120° intervals and may be transmitted therefrom along one of another three possible directions which are spaced apart at 120° intervals and which are also spaced 60° from respective ones of the first-mentioned three possible directions.

3,772,662

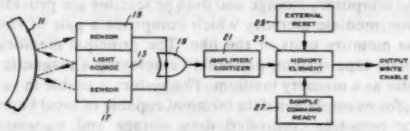
WRITE RING DETECTOR FOR MAGNETIC RECORDERS

Ronald S. Blair, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1971, Ser. No. 214,349

Int. Cl. G11b *15/02*

U.S. Cl. 340—174.1 G **5 Claims**



In a read/write magnetic recording apparatus a write ring is inserted into an annular groove in the magnetic tape reel to indicate a write mode of operation. A hub assembly by which the magnetic tape reel is secured to the recording apparatus includes a reflective surface the position of which is dependent upon the existence or non-existence of the write ring. When the position of the reflective surface corresponds to the existence of the write ring, a light beam emitted from a light source is reflected by the reflective surface and received by a photosensor which produces an electrical output. Electrical circuitry is responsive to the electrical output of the photosensor to produce a logic pulse to enable the write circuitry of the recording apparatus. The write circuitry of the recording apparatus is inhibited when there is no electrical pulse output from the electrical circuitry.

3,772,663

STATUS DETECTOR AND MEMORY ARRANGEMENT

David M. Shaver, Brockville, Ontario, Canada, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

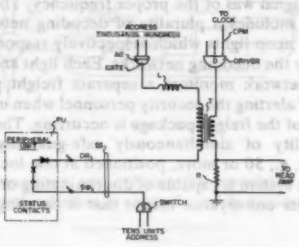
Filed Aug. 31, 1972, Ser. No. 285,395

Int. Cl. G11c *5/02;* **H04m** *3/00*

U.S. Cl. 340—174 M **11 Claims**

Used in a stored program telephone switching system using a ring core memory in which word wires are connected at one end to a memory driver and at the other end to a memory switch which have memory input address leads, and a clock

pulse input to each driver to actuate it to produce a current ramp. Peripheral units such as line circuits and junctors have relay contacts to indicate their status. The status detector comprises a pulse transformer having its secondary winding in series with an inductor connected at one end to an addressing gate, and at the other end to a lead to the status contacts, the other side of the status contacts being connected to a memory



switch; so that when the gate and switch are both addressed and the status contacts path provides continuity the transformer is saturated. The primary of the transformer is connected to a memory driver and a sensing device such as a transformer or resistor, so that when the driver produces a current ramp pulse when the transformer is saturated an output is supplied from the sense device to a read amplifier associated with the ring core memory output.

3,772,664

INCREMENTAL TAPE DRIVE WITH OPTICALLY DERIVED CONTROL PULSES

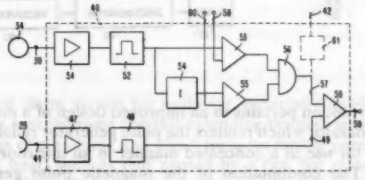
Klaus Schlickeiser, Weisskreuzstrasse 212, Boll near Hechingen, Germany

Filed July 13, 1971, Ser. No. 162,083

Claims priority, application Germany, July 14, 1970, P 20 34 836.1

Int. Cl. G11b *15/08*

U.S. Cl. 340—174.1 A **18 Claims**



First and second information sequence are stored character-interlaced on magnetic tape. Bits representing characters are stored serially, each character occupying a determined length of tape. Second track on tape has markings extending the length of each character of first information sequence. Stepwise tape transport has constant speed driving phase and variable speed starting and braking phase. The markings on second track are sensed and control transport means so that the transport drive phase coincides with read out of character from selected one of the two sequences.

3,772,665

SYSTEM FOR LOADING AND POSITIONING A TRANSDUCER IN A DATA STORAGE DISC CARTRIDGE

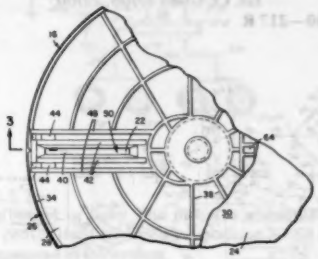
Friedrich R. Hertrich, Boulder, Colo., assignor to Iomec Incorporated, Santa Clara, Calif.

Filed Mar. 31, 1972, Ser. No. 240,068

Int. Cl. G11b *5/54*

U.S. Cl. 340—174.1 C **24 Claims**

A disc cartridge has a cutout at its periphery and a rigid interior plate that overlies the rotating disc. The plate has flat guide surfaces that straddle a slot extending from adjacent the opening towards the center of the plate. Ramps are laterally spaced with respect to the surfaces at their peripheral end and form a guide from the opening to the flat surfaces. A linearly



movable transducer mounted to an end of a leaf spring is biased against the ramp and the guide surfaces. The guide surfaces thereby accurately position the transducer in close proximity to the disc. Means is also provided for maintaining the opening normally covered.

3,772,666

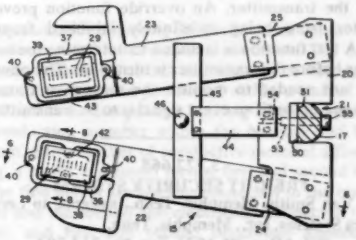
INTERLACED MAGNETIC HEADS

Max Scholz, Carlisle, and Carmen P. Grasso, Methuen, both of Mass., assignors to Data General Corporation, Southboro, Mass.

Filed Apr. 3, 1972, Ser. No. 240,604

Int. Cl. G11b *5/56*

U.S. Cl. 340—174.1 C **23 Claims**

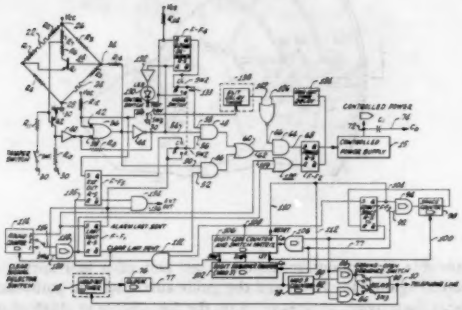


A magnetic disk memory storage system using fixed recording heads with one or more magnetic storage disks, wherein the recording heads are mounted on one or more arm assemblies, each arm assembly having at least a pair of end portions on each of which head pads having a plurality of recording heads are mounted in a gimballed fashion. The head pads in which the recording heads are embedded are arranged so that the recording heads on each head pad of each end portion have a fixed, interlaced relationship with the recording heads on the head pads of each other end portion of the same arm assembly. Means are further provided for controllably moving the arm assemblies to and away from their fixed operating positions with reference to their associated disk surfaces. The controllable moving means are arranged so that the recording heads are always placed in their correct tracking relationships with their corresponding data tracks when they are moved to their operating positions and so that the recording heads can be safely and reliably moved away from their associated disk surfaces without damage to the heads or to such surfaces.

3,772,667
EVENT SIGNAL TRANSMITTER HAVING EVENT SIGNAL DISPLAYING MEANS

Melvin S. Falck, Jr., North Hollywood, Calif., assignor to Morse Products Mfg., Sylmar, Calif.

Filed Nov. 15, 1971, Ser. No. 198,543
Int. Cl. G08b *17/06, 25/00*
U.S. Cl. 340—217 R **25 Claims**

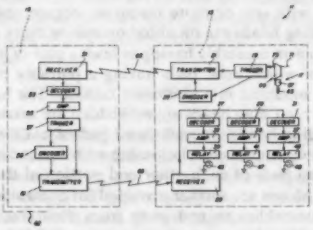


An event signal transmitter for use in an alarm system in which a number of similar transmitters are commonly connected on a single transmission line to a central office. The transmitter is programmable by means of switches to provide a plurality of modes of operation. Alarm and clear events are signaled to the central office by transmitting a predetermined number of rounds of a three digit code number set on a switch matrix. A closing sequence may be selectively employed to reduce undesirable transmission while the protected premises are being closed. An exit delay timer may also be used for this purpose. A line monitor prevents simultaneous transmission by more than one transmitter and a hold out timing period for the monitor is dependent on the time of the occurrence of an event at the transmitter. An override function prevents the transmitter from being indefinitely inhibited from transmitting. A test function is included to determine the condition of sensors before the transmitter is turned on. The power to all circuitry not needed to monitor the sensors or transmission line is turned off until an event signal is to be transmitted.

3,772,668
FREIGHT SECURITY SYSTEM

William Van Smith, Memphis, Tenn., assignor to Lectrolarm Custom Systems, Inc., Memphis, Tenn.

Filed Dec. 29, 1971, Ser. No. 213,703
Int. Cl. G01s *1/02*
U.S. Cl. 340—224 **3 Claims**

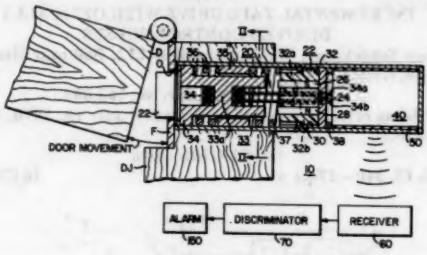


An electronic security system for safe-guarding freight against theft while in transit and/or while sitting at a dock site. The concept of the system is to plant a unique transceiver in the freight package which responds with a coded signal when properly interrogated, i. e., with a coded radio frequency. The system includes a second transceiver, which is monitored by security personnel, and which is positioned at a strategic location. The monitored transceiver may be automatically triggered each time a conveyance means, e. g., a truck or the like, passes a particular point or it may be triggered manually. Triggering the monitored transceiver causes the transmitted carrier frequency to be modulated with a first coded audio signal. The planted transceiver responds with a second coded signal, if the first signal was of the proper frequency. The monitored transceiver includes a plurality of decoding networks and a plurality of neon lights which respectively respond to signals accepted by the decoding networks. Each light and associated decoding network monitors a separate freight package for purposes of alerting the security personnel when unauthorized movement of the freight package is occurring. The system has the capability of simultaneously safe-guarding numerous packages, e. g., 50 or more, positioned at one location. Additionally, the system is capable of discriminating or pinpointing the particular conveyance means that is carrying the freight package.

3,772,669
MAGNETIC PULSE GENERATOR

Paul M. Johnston, Greensburg; Raymond W. MacKenzie, Pittsburgh, and Theodore M. Heinrich, Murrysville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 14, 1972, Ser. No. 271,877
Int. Cl. H02k *41/00;* **G08b** *13/08*
U.S. Cl. 340—224 **12 Claims**



The invention pertains to an improved design of a magnetic pulse generator which renders the pulse generator reliable and suitable for use in a concealed manner in an intrusion alarm system. The combination of the magnetic pulse generator which consists of a magnet which is movable with respect to a pickup coil wound about a pole piece in response to movement of a monitored object such as a door or window, and a transmitter circuit in a single package provides a compact intrusion alarm device. A change in magnetic flux resulting from rapid movement of the pole piece relative to the magnet in response to movement of the monitored object produces an output signal which is subsequently amplified and transmitted by the transmitter circuit to a remote mounted alarm indicating circuit.

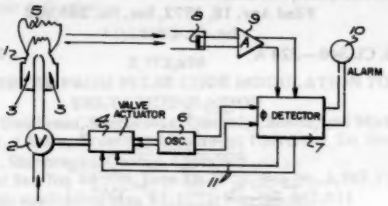
3,772,670
DETECTION OF FLAMES AT BURNERS

Joshua Swithenbank, and David Shaw Taylor, both of Sheffield, England, assignors to Land Pyrometers Limited

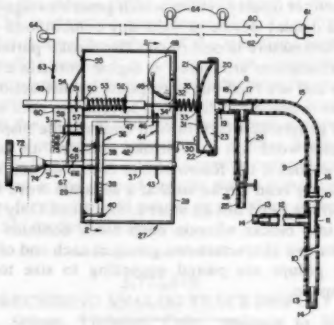
Filed Apr. 27, 1971, Ser. No. 137,804
Claims priority, application Great Britain, May 6, 1970, 21,761/70
Int. Cl. G08b *17/12*
U.S. Cl. 340—228.2 **11 Claims**

The detection of a flame at a burner is effected by applying determined fluctuations to the flow of at least one reactant to

the burner, detecting radiation from the flame from the burner, correlating the fluctuations in the radiation with the applied fluctuations, and utilising the correlated fluctuations in the detected radiation to control a safety device.



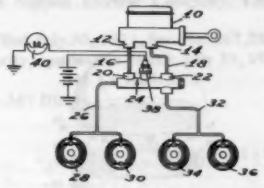
3,772,671
FIRE ALARM
William D. Owen, 578 W. Main St., Kahoka, Mo.
Filed May 22, 1972, Ser. No. 255,820
Int. Cl. G08b *17/04*
U.S. Cl. 340—229 **7 Claims**



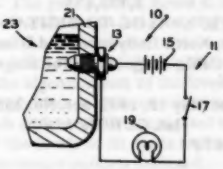
A fire alarm system for buildings, especially dwellings, including a pressurized conduit extending through substantially all parts of a building and which includes fusible parts responsive to heat, such as that caused by a fire, for releasing the pressure from the conduit, to release a distended diaphragm which is connected to the conduit system. Release of the diaphragm permits movement of a detent rod, connected thereto, to a position for releasing a clock mechanism for mechanically producing an audible alarm. Release of the clock mechanism effects release of an electric switch which is spring biased to a circuit closing position for energizing electrical alarms which may constitute lights or audible alarms and which may additionally function as a visual indicator to indicate that the alarm has been inadvertently activated.

3,772,672
DIFFERENTIAL PRESSURE WARNING DEVICE FOR DUAL BRAKE SYSTEM
Carmeli Adahan, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Continuation of Ser. No. 785,218, Dec. 19, 1968, abandoned.
This application June 28, 1971, Ser. No. 157,623
Int. Cl. G08b *21/00*; B60t *11/10*
U.S. Cl. 340—242 **12 Claims**

A differential pressure warning device for a split or dual brake system having a shuttle piston constructed to move to either of two extreme positions in response to a pressure failure in a portion of the brake system and to thereby actuate a warning buzzer or light. The piston is constructed to automatically center itself in a neutral position when equal pressures are restored in the system.



3,772,673
TEMPERATURE COMPENSATED FLUID LEVEL SENSOR
Nikolaus A. Szeverenyi, Warren, Pa., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.
Filed Mar. 20, 1972, Ser. No. 236,148
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 R **19 Claims**



An apparatus for detecting the presence or absence of fluid at a predetermined level within a container. The apparatus comprises an electrical circuit and a sensor device electrically joined to the circuit and positioned within a wall of the container. The device comprises a housing of conductive material, a conducting member within the housing and insulated therefrom, a tip member of conductive material affixed to the housing, a resistive element having first and second opposing ends, the first end is electrically connected to the conducting member and the second end electrically connected to the tip member, and first and second oppositely aligned similar bimetallic members affixed respectively to the first and second opposing ends of the resistive element and adapted for engaging only when the temperature difference between the first and second opposing ends of the element exceeds a predetermined level.

3,772,674
TAMPER RESISTANT CONTAINER
Albert M. Jackson, Phoenix, Md., assignor to Martin Marietta Corporation, New York, N.Y.
Filed Sept. 15, 1964, Ser. No. 397,672
Int. Cl. G08b *13/08*
U.S. Cl. 340—273 **3 Claims**

1. A tamper resistant container including a main container body and a separable cover each having mating surfaces and defining a complete enclosure when said mating surfaces are placed in abutting relationship, at least one wall carried electrical circuit formed within respective cover and main body walls, conductive tabs placed in spaced relationship upon the mating surfaces of said cover and main container body, means for electrically connecting said circuits to said spaced tabs,

means for electrically connecting corresponding tabs of said main container body and said cover, said connecting means including a wet silver film positioned between respective tabs with said films being air curable to insure completion of an

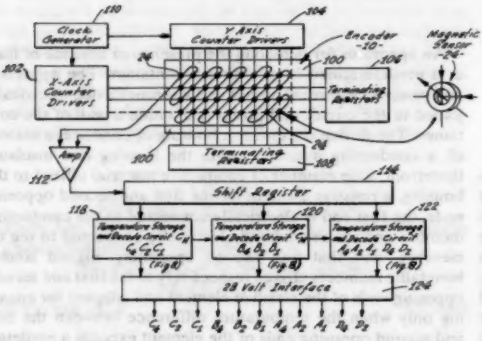
electrical circuit between said main container body and said separable cover, and means for energizing said circuit whereby attempts to penetrate said container result in changing the electrical characteristics of said circuit.

3,772,675

MAGNETIC ANALOG-TO-DIGITAL ENCODER

Norman J. Bose, North Hollywood, and Hamid H. Sani, Glendale, both of Calif., assignors to The Singer Company, New York, N.Y.

Filed May 15, 1972, Ser. No. 253,636
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 P **7 Claims**



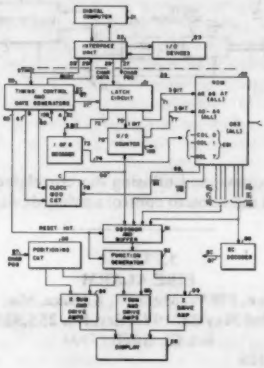
A magnetic shaft rotation-to-digital encoder is provided which includes magnetic sensors positioned adjacent to a high speed and a low speed magnetically coded rotatable disc, the sensors being wound with two excitation windings and an output winding, and being wired for coincident current operation in an X-Y matrix form. When X and Y signals coincide in a particular sensor core, the core is set to a logic "1," unless the sensor senses an inhibiting magnetic field on its associated disc. Each of the two rotatable discs has four binary coded magnetic tracks on its surface in the embodiment to be described. By positioning five magnetic sensors on the least significant digit track of the high speed disc, a total of eight tracks provide output signals which, when applied to appropriate logic circuitry, produce 11 output binary bits in any desired code, such as the ICAO altitude code which is in general use in conjunction with aircraft transponders.

3,772,676

CHARACTER DISPLAY SYSTEM

Grant W. Conley, Manchester, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Apr. 18, 1972, Ser. No. 245,082
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **12 Claims**



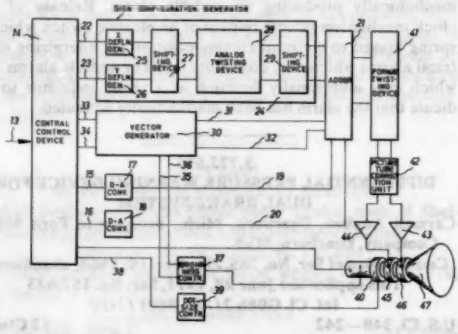
A character display system which generates signals for controlling a display device to write any combination of a repertoire of characters is described. The stroke patterns for the various characters are stored as digital words in a Read Only Memory and are read out in response to instructions to write particular characters. The words so read are used to control a function generator which in turn controls the display device. The digital word for each stroke contains an auxiliary bit which specifies if the follow-stroke is to be a continuation of the presently read stroke so that a separate word for the following stroke need not be stored. The Read Only Memory is divided into blocks wherein each block contains the stroke groups for two characters-one group at each end of the block, and the groups are paired according to size to minimize storage space.

3,772,677

METHOD AND ARRANGEMENT FOR THE MODIFIED RECORDATION OF SIGN CONFIGURATIONS

Reudiger Sommer, Raisdorf, Germany, assignor to Dr.-Ing. Rudolf Hell

Filed July 28, 1971, Ser. No. 166,800
Claims priority, application Germany, July 1, 1970, P 20 38 374.8
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 A **9 Claims**



Recordation of letters and/or picture signs with the help of an electron beam on a picture screen of an electron-beam

tube, whereby the sign configurations are recorded with any selected tilt and/or offset depending on command data, by a recordation deflection which is controlled by previously established recordation data of the signs and which proceeds from a basic deflection.

3,772,678

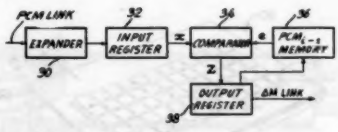
CONVERTER FROM PULSE CODE MODULATION TO DELTA MODULATION

Pierre A. Deschenes, Sherbrooke, Quebec, Canada, and Michel Villeret, Gisors, France, assignors to Universite De Sherbrooke, Sherbrooke, Quebec, Canada

Division of Ser. No. 44,994, June 10, 1970, Pat. No. 3,707,712. This application May 22, 1972, Ser. No. 255,811

Int. Cl. H03k *11/00, 13/24*

U.S. Cl. 340—347 DD **10 Claims**



The system for the conversion of a PCM modulation signal into a ΔM modulation signal comprises: first register means for storing an input signal consisting of *m* binary digits representing the value *x* of the quantized signal at the end of a regular PCM modulation sampling period T_i; a "digital integrator" for storing the value *e* of the quantized signal at the end of sampling period T_{i-1}; a comparator connected to the first register means and to the digital integrator for comparing the value of the quantized signal *x* stored in the first register means with the value of the quantized signal *e* stored in the digital integrator and for generating a positive binary output signal Z if x is larger than *e* and a negative output signal Z if *x* is smaller than *e*; and second register means connected to the comparator for storing said output signal which is representative of the ΔM modulation signal.

3,772,679

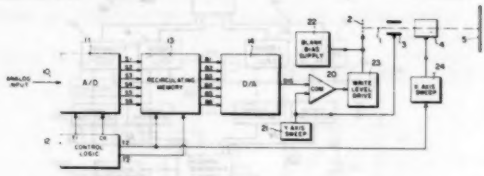
PRECESSING ANALOG TRACE DISPLAY

David W. Scheer, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 46,223, June 15, 1970. This application June 30, 1971, Ser. No. 158,621

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 AD **3 Claims**



A signal display circuit includes an analog to digital converter, a recirculating memory, a digital to analog converter, and a CRT display means. The memory and the display means are synchronized so that a bright spot representative of the information contained in one location of the memory is produced on the display means for each shifting of information in the memory. New information replaces existing information in the memory at a rate less than the shifting rate of the memory so that the displayed signal appears to move across the viewing screen at a variable speed and with a constant brightness. When no new information is fed into the memory, the display means will continue to show the position of the signal as represented by the data stored in the memory.

3,772,680

DIGITAL TRANSMISSION CHANNEL MONITORING SYSTEM

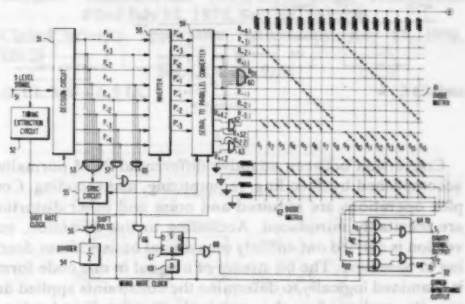
Kiyoaki Kawai, and Rikio Maruta, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed July 30, 1971, Ser. No. 167,787

Claims priority, application Japan, July 31, 1970, 45/66558

Int. Cl. H04l *3/02*

U.S. Cl. 340—347 DD **12 Claims**



A digital transmission channel monitoring system including means for inserting at a transmitter the equivalent of a binary signal parity check bit into each of the n-digit code words of a multi-level signal. The parity check signal is inserted directly into the multi-level code words by detecting if the algebraic sum of the levels of the digits of each code word is an even or odd number. The level of one of the digits is then selectively changed so that the algebraic sum of the levels of the digits in each word is always either an even number or an odd number. At a receiver, each code word is investigated to determine the algebraic sum of the levels of its digits and an error signal is generated when incorrect parity is detected.

3,772,681

FREQUENCY SYNTHESISER

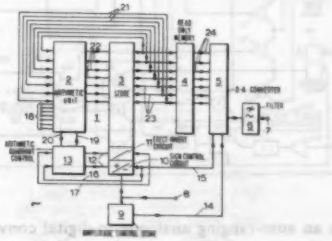
Gerald David Skingle, Harrow, England, assignor to The Post Office, London, England

Filed Oct. 12, 1971, Ser. No. 188,367

Claims priority, application Great Britain, Oct. 14, 1970, 48864/70

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 DA **10 Claims**

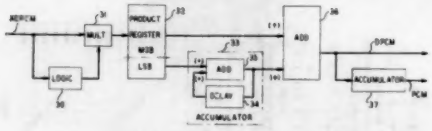


A frequency synthesiser, which may be used in Modem systems MCVFT systems and F.M. receivers, produces a predetermined waveform signal by using the digital values of incremental points on the waveform, which values are selected in a sequence determined by a address selection arrangement from a digital storage memory of the read-only type. The output from the read-only memory is a digital signal which may be filtered and distributed to a number of channels or it may be passed by way of a digital-to-analogue converter to generate the predetermined phase continuous waveform.

3,772,682
DIGITAL CONVERSION FROM ONE PCM FORMAT TO ANOTHER

James Loton Flanagan, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Apr. 19, 1972, Ser. No. 245,559
Int. Cl. H03k *13/24*
U.S. Cl. 340—347 DD 8 Claims

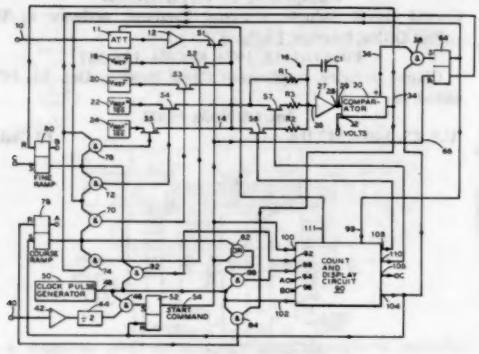


Conversion between adaptive differential PCM normally is accomplished by decoding, requantizing, and recoding. Complex operations are required and noise and other distortions are inevitably introduced. According to this invention, conversion is carried out entirely on a digital basis without decoding to baseband. The bit stream of a signal in one code format is examined logically to determine the constraints applied during its coding for the removal of signal redundancy. Redundancy is thereupon redistributed by adjusting the code word description to the degree necessary for the new format. Since no intermediate decoding is employed, no additional noise is introduced, and the resulting coded signal may be expressed with digital words to any desired accuracy.

3,772,683
ANALOGUE TO DIGITAL CONVERTERS

Howard Anthony Dorey, Godalming, England, assignor to the Solartron Electronic Group Limited, Farnborough, Hampshire, England

Filed Sept. 27, 1972, Ser. No. 292,683
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 NT 19 Claims

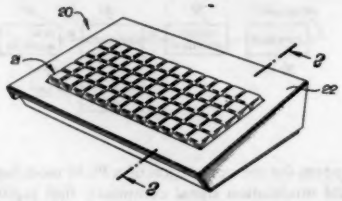


In an auto-ranging analogue-to-digital converter of the integrating type, the integrator has a single preferred decade range of operation, and there is provided means for converting the output of the integrator to an intermediate digital signal having $(N+R-1)$ decades of resolution for analogue signals in the highest range applied to the integrator, where N is the desired number of significant figures of resolution in the output digital signal and R is the number of decade ranges of magnitude of the analogue signal at the input of the integrator. Selection means comprising a shift register is provided for selecting from the intermediate digital signal the N most significant figures thereof to constitute the output digital signal, and there is also provided means for indicating the actual number of significant figures in the intermediate digital, so as to indicate the range in which the magnitude of the analogue signal lies. The lastmentioned means is used, if necessary, to set the integrator to its preferred range of operation for the next measurement cycle with the same analogue signal, and may also be used if necessary to operate an input attenuator at the input of the integrator.

3,772,684
PUSH BUTTON KEYBOARD WITH OSCILLATOR KEYING

John R. Scantlin, Los Angeles, Calif., assignor to Scantlin Electronics, Inc., Los Angeles, Calif.

Filed Jan. 26, 1972, Ser. No. 220,936
Int. Cl. H04l *15/06*; G08c *1/00*
U.S. Cl. 340—365 L 16 Claims

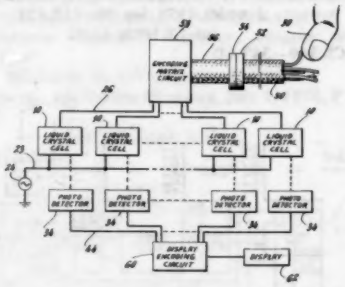


A push button keyboard with no moving contacts. A keyboard with an oscillator for each push button, with pushing of the button changing the oscillator frequency. Circuitry for sequentially sampling the push button oscillators for comparison with a master oscillator to determine push button position. Circuitry providing a hysteresis band to eliminate push button bounce and indefinite button motion problems.

3,772,685
TOUCH RESPONSIVE ELECTRIC SWITCH AND DEVICE FOR THE USE THEREOF

James Vincent Masi, Monroe, Conn., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Mar. 29, 1972, Ser. No. 239,117
Int. Cl. G06f *3/02*
U.S. Cl. 340—365 C 30 Claims



A high impedance, low voltage, electro-optic light valve, such as, for example, a liquid crystal cell, has one terminal connected to a source of varying potential and the other terminal connected to an element adapted to be touched by a person or otherwise contacted by an impedance path to a potential which is highe or lower than the varying potential by an amount at least equal to the excitation potential of the valve. When the element is contacted, a circuit is completed through the valve, causing its optical characteristics to change. A touch (contact) responsive switch is provided by detecting the change in the optical characteristics of the valve and by generating some sort of output in response thereto.

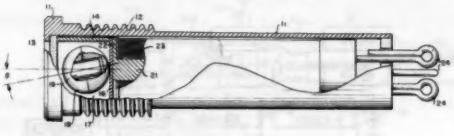
The switch may be utilized in devices such as a keyboard, a cable conductor identifier, or a touch response matrix board where an indication is required as to which of a plurality of elements has been touched or otherwise contacted. For such applications, the elements to be touched are connected through a suitable coding means to a bank of valves. The outputs from the valve detectors indicate, in a suitable code, the element touched.

3,772,686

ELECTROMAGNETIC INDICATOR HAVING ROTATING SPHERE

Felix A. Chardon, 32 Cape Rd., New Hope, Pa.

Filed Aug. 17, 1971, Ser. No. 172,444
Int. Cl. G08b *5/00, 23/00*
U.S. Cl. 340—373 R **11 Claims**



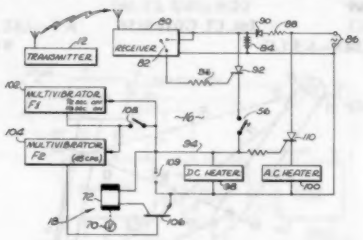
This invention is an electromagnetic indicator of the type wherein a permanent magnet is caused to rotate a sphere to display positional identifying indicia on the sphere in response to the field of an adjacent magnetizable core mounted in an electromagnetic coil. The center of mass of the core is distributed to displace the axis of the permanent magnet at a positive angle relative to the center line of the core when the coil is energized, the permanent magnet latching the sphere to the core at said offset angle upon deenergization the coil and demagnetization of the core at each respective display position of the sphere. The angle of offset of the permanent magnet imparts torque to assist in rotating said shpere upon a reversal of the energization of the coil and magnetic poles of the core. A reset magnet may also be provided to return the sphere to its initial position upon demagnetization of the core.

3,772,687

ELECTRICALLY-CONTROLLED ALARM SYSTEM

Angus A. Scott, Palos Verdes Estates, Calif., assignor to Consulting Specialties, Inc., Torrance, Calif.

Continuation-in-part of Ser. No. 94,788, Dec. 3, 1970, abandoned. This application Feb. 9, 1972, Ser. No. 224,732
Int. Cl. G08b *3/06*
U.S. Cl. 340—404 **4 Claims**



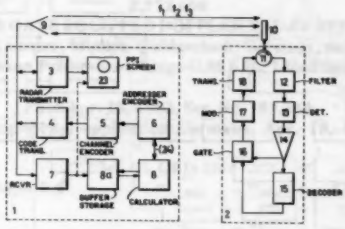
An alarm system is disclosed for providing an audible signal, incorporating a pressurized vessel for supplying fluid to a sonic horn under control of an electrical system and a solenoid valve. As disclosed, the electrical system incorporates independent a.c. and d.c. power arrangements for energizing the valve as well as the remainder of the control system. A trigger circuit is actuated by a receiver and a remotely located transmitter, to initiate operation, which in the disclosed embodiments involves a compound pattern or cycle for more effective use of the fluid and to increase the severity of the signal as human stimulus. As disclosed, the system also incorporates heater means for maintaining the pressure structure operative over an extended interval of time.

3,772,688

SECONDARY RADAR SYSTEM

Johny Abram Smit, and Wim Bernard Samuel Maria Kneefel, Noordwijk, both of Netherlands, assignors to Christiaan Haygens Laboratorium N.V., Noordwijk, Netherlands

Filed July 12, 1971, Ser. No. 161,676
Claims priority, application Netherlands, July 17, 1970, 7010623
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.5 LC **3 Claims**



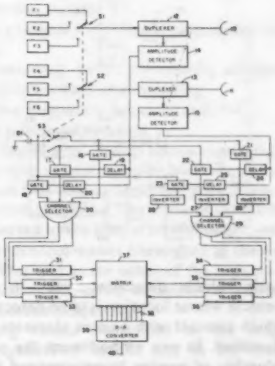
A primary and secondary radar system utilizing a common directional scanning antenna are located in an interrogator in order to obtain navigational information and identity for each of the interrogated transponders of the objects of interest. Selected objects are interrogated by a specific address for each object transponder, in a sequence determined by the position of the objects with respect to the interrogator. The desired information is obtained from each transponder reply which occur only at the moment of interrogation from the scanning directional antenna.

3,772,689

RADAR TARGET DISCRIMINATION METHOD AND APPARATUS

Lloyd W. Root, Jr., Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

Filed Dec. 6, 1967, Ser. No. 690,703
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 SA **11 Claims**



A method of and apparatus for discriminating radar targets. The targets are illuminated by radar pulses having different characteristics. The pulses may be of different frequencies or polarizations, or may be of the same frequency, but time

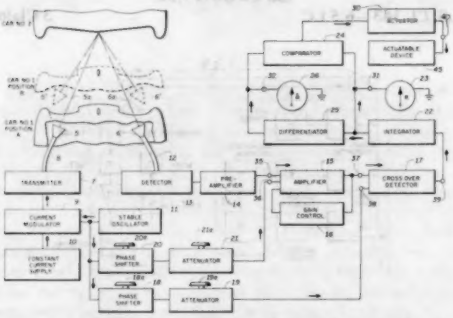
separated. The different characteristics cause echoes of different amplitudes, from a complex target. The ratio of amplitudes is determined, and a target which yields the largest ratio for a given signal characteristic is assumed to be the most complex target.

3,772,690

VEHICLE SAFETY APPARATUS

Carl T. Nations, Seminole, Fla., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 7, 1971, Ser. No. 205,592
Int. Cl. G01s 9/02
U.S. Cl. 343—7 ED 13 Claims



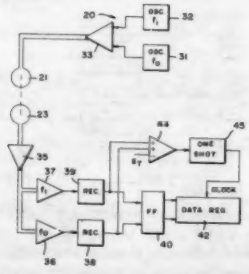
A vehicle safety apparatus includes radio means for the detection of an impeding collision immediately prior to the contact of a protected vehicle with another vehicle or other object and for the actuation of restraining or other protective devices for the protection of the occupants of the vehicle when the crash actually occurs. Modulated continuous wave high frequency transmitter and receiver apparatus is employed for processing reflected object signals having a wide range of possible amplitudes at the receiver. Range and range rate signals are generated and compared for actuation of passenger restraints or other protective devices.

3,772,691

AUTOMATIC VEHICLE LOCATION SYSTEM

George R. Hansen, Arcadia, Calif., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Oct. 5, 1971, Ser. No. 186,700
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 SS 4 Claims



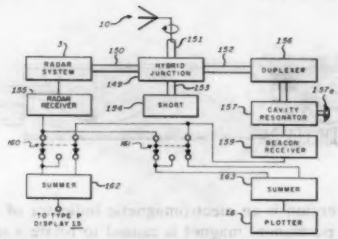
An automatic vehicle detection system is disclosed, in which each vehicle whose location is to be detected carries active means which interact with passive elements at each location to be identified. In one embodiment the passive means comprise a plurality of passive loops arranged in a sequence along the travel direction. Each of the loops is tuned to a chosen frequency so that the sequence of the frequencies defines the location code. As the vehicle traverses the sequence fo the loops as it passes over each loop, signals only at the frequency of the loop being passed over are coupled from a vehicle transmitter to a vehicle receiver. The frequencies of the received signals in the receiver produce outputs which together represent a code of the traversed location. In another embodiment the code location is defined by a painted pattern which reflects light to a vehicle-carried detector whose output is used to derive the code defined by the pattern.

3,772,692

MARINE RADAR-BEACON TRANSPONDER NAVIGATION AND COLLISION AVOIDANCE SYSTEM

Frederick D. Braddon, Babylon, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 5, 1972, Ser. No. 215,521
Int. Cl. G01s 9/02
U.S. Cl. 343—6 R 9 Claims



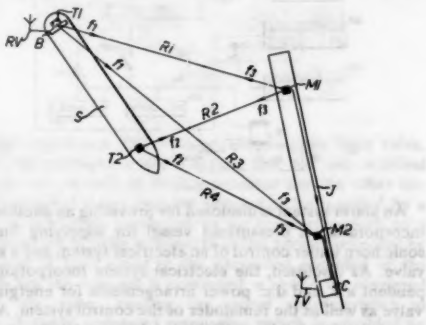
A marine radar-beacon transponder navigation and collision avoidance system provides facilities for early detection of, identification of, and communication with cooperating marine vessels by virtue of the integration of the radar and radio transponder systems of the ships into a complete intelligence processing system permitting early detection and identification of any two stations, additionally providing an intelligence conveying link therebetween. Any collision threat situation and its participants are identified by cooperative reference to the radar plan position indicator or to a permanent plotted record which displays dangerous constant bearing intruders as specially characterized and easily recognized lines.

3,772,693

SECONDARY RADAR RANGING SYSTEMS

Robert Allard, Malvern; Peter Joseph Bulman, Crowle; John Lawton Clarke, Malvern; John Roger Prior, Malvern, and Donald Frederick Sampson, Malvern, all of England, assignor to Esso Research and Engineering Company, Linden, N.Y.

Filed Nov. 17, 1970, Ser. No. 90,393
Claims priority, application Great Britain, Nov. 19, 1969, 56,556/69
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 LC 9 Claims



A system for assisting the berthing of large ships measures their range and aspect relative to the berth and includes two

master radars on the ship and two radar transponders at the berth and means for measuring the four ranges between each master radar and each transponder. Alternatively the master radars may be at the berth and the radar transponders on the ship.

3,772,694

METHOD OF PROTECTING PASSENGERS IN A MOVING VEHICLE UPON COLLISION THEREOF

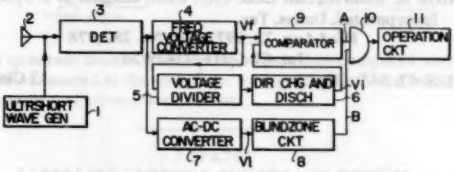
Kazuo Sato and Tomio Hisatsune, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Feb. 9, 1971, Ser. No. 113,896

Claims priority, application Japan, Feb. 19, 1970, 45/13818

Int. Cl. G01s 9/46

U.S. Cl. 343—7 ED **9 Claims**



The disclosed apparatus anticipates an impending vehicle collision by detecting the Doppler shift caused by an oncoming object and actuating a passenger protecting device. An antenna radiates a horizontally spread pattern of ultra-short wave signals and senses signals reflected by an oncoming object. A homodyne detector mixes the radiated and reflected signals to produce a Doppler frequency. A converter responds to the amplitude of the Doppler frequency and produces a first safety signal when the converter determines that the object is within a predetermined zone. A frequency-voltage converter converts the Doppler frequency into a voltage. A comparator compares the voltage with a second smaller voltage that is derived from the first voltage but whose rate of change is dampened. The comparator produces a second safety signal when the first voltage exceeds the second after a given time. A gate actuates air bags when both safety signals appear.

3,772,695

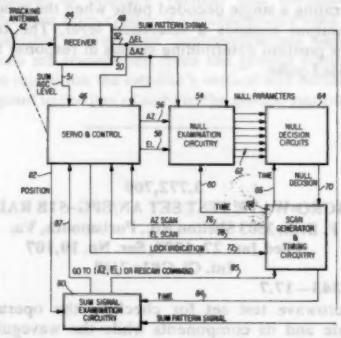
FALSE NULL DETECTION IN AUTOMATIC TRACKING SYSTEMS

Dale M. Hoffman, Palm Bay, Fla., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Mar. 22, 1972, Ser. No. 237,147

Int. Cl. G01s 9/22

U.S. Cl. 343—7 A **12 Claims**



When operating properly, automatic tracking antennas lock to a null in the tracking pattern that is spatially coincident with the boresight axis of the antenna. Other pattern nulls (false nulls), not coincident with the boresight axis, exist in the sidelobe region of the antenna's pattern. By moving the antenna off an acquired target a fraction of one beamwidth, and sampling several antenna parameters at the new angular location, this invention determines whether a given lock point is true (mainlobe lock) or false (sidelobe lock). One salient feature of this design is that the true/false decision is based solely upon information contained within the pattern of the system's tracking antenna and, thus, does not require the support of an auxiliary aperture.

3,772,696

SPEED GATE EQUIPPED DOPPLER RADAR SYSTEM

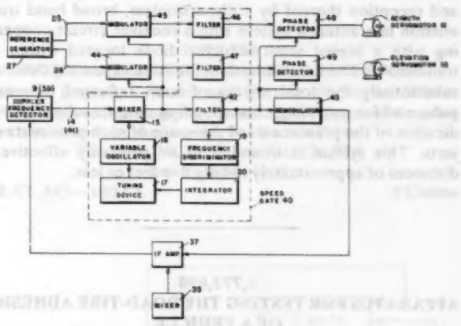
Helmut Kummer, Munich-Waldperlach, Germany, assignor to Telefunken Patentverwertungs-G.M.b.H., Ulm/Donau, Germany

Filed Apr. 18, 1962, Ser. No. 189,244

Claims priority, application Germany, Apr. 18, 1961, T 20,001

Int. Cl. G01s 9/44

U.S. Cl. 343—7.4 **12 Claims**



2. In a Doppler radar system, the combination which comprises:

a. search antenna means;

b. reference generator means coupled to said search antenna means;

c. signal processing means electrically connected to said search antenna means and including

1. a Doppler frequency detector, and

2. a speed gate incorporating,

i. a two-input mixer one of whose inputs is connected to the output of said Doppler frequency detector,

ii. at least first and second band pass filters each having a narrow pass band, the input of said first filter being connected to the output of said mixer, and

iii. mixer control means connected to the output of said first filter and to the other of the inputs of said mixer for causing the latter to deliver a substantially constant carrier frequency;

d. modulating means connected to the output of said reference generator means and to the output of said mixer, the output of said modulating means being connected to the input of said second filter of said speed gate; and

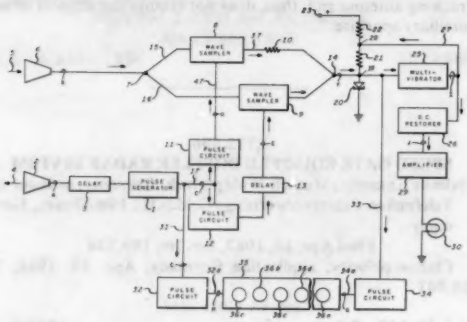
e. means connecting the output of said second filter to said search antenna means for controlling the position thereof.

3,772,697

BASE-BAND PULSE OBJECT SENSOR SYSTEM

Gerald F. Ross, Lexington, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 19, 1971, Ser. No. 134,990
Int. Cl. G01s 9/06
U.S. Cl. 343—13 R 12 Claims



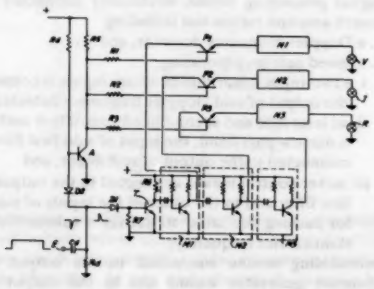
A pulse transmitter-receiver system for detecting the presence and proximity of objects employs transmission of short base-band or subnanosecond electromagnetic signals and reception thereof by a dispersionless, broad band transmission line antenna system with a receiver circuit cooperating with a biased semiconductor diode located within the transmission line antenna system for instantaneously detecting substantially the total energy of each reflected base-band pulse and for providing corresponding outputs suitable for indication of the presence or of the range of such proximate objects. This system is intended to be primarily effective at distances of approximately twenty five feet or less.

3,772,698

APPARATUS FOR TESTING THE ROAD-TIRE ADHESION OF A VEHICLE

Andre Furia, Neuilly, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed May 17, 1971, Ser. No. 144,146
Claims priority, application France, May 20, 1970, 7018318
Int. Cl. G01s 9/06; B60t 8/06
U.S. Cl. 343—13 R 6 Claims



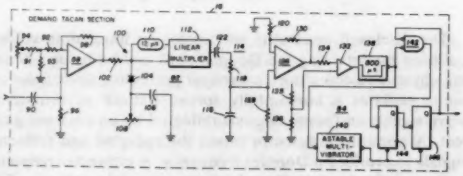
The apparatus gives information relative to the road-tyre adhesion of a vehicle, comprising an electronic anti-skid device so as to allow the driver to appraise or to know the distance over which move during a panic braking before coming to a stop or before slowing down to a safe speed. The apparatus comprises a pulse-width measuring circuit for measuring the duration of the isolation signals which are developed in the anti-skid device for temporarily isolating the braking system. The information can be displayed by colored lamps. However, the apparatus can comprise more elaborate indicating means delivering signals which can be converted into direct readings or into signals representative of the theoretical braking distance. The comparison of these signals with signals delivered by a range finding device measuring the distance separating the vehicle from an obstacle ahead allows a warning signal to be obtained when the distance is unsafe.

3,772,699

RADIO NAVIGATION PULSE PAIR DETECTOR

Glyn K. Romrell, Salt Lake City, Utah, assignor to E-Systems Incorporated, Dallas, Tex.

Filed Aug. 23, 1972, Ser. No. 282,978
Int. Cl. G01s 7/34, 9/56
U.S. Cl. 343—17.1 12 Claims



In a radio navigation system responding to an interrogation pulse pair there must be a reliable determination of when the system receiver is being interrogated by an aircraft, preferably without decreasing the receiver sensitivity. A radio navigation system of the type described receives a pair of interrogation pulses which are decoded into a single pulse for operation of a reply transmitter. An interrogation pulse pair detector decodes the interrogation pulses only during the active time span thereof by first amplifying and detecting the pulse level. A negative clipper circuit responds to the amplified pulse pair and is adjusted to blank-out that portion of the amplifier output signal below a preset level. This eliminates the system blanking pulses present in some systems, as well as most low level noise pulses. The clipped interrogation pulses are applied to a modified correlator wherein they are multiplied together by passing one pulse through a delay line and integrating the output pulse. The integrated pulse is applied to a comparator for generating a single decoded pulse when the modified correlator output exceeds a reference level. The transmitter generates position determining signals in response to the single decoded pulse.

3,772,700

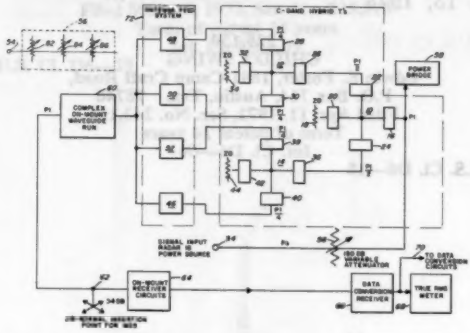
MICRO-WAVE TEST SET AN/SPG-51B RADAR

William F. Belli, 3503 Shelton Rd., Portsmouth, Va.

Filed Jan. 27, 1970, Ser. No. 10,107
Int. Cl. G01s 7/40
U.S. Cl. 343—17.7 6 Claims

A microwave test set for checking the operation of a waveguide and its components while the waveguide is still mounted on equipment. A signal of known power level from a variable signal source is injected at the front end of the antenna system and by the use of an assembly of three C band

hybrid T assemblies power of equal amplitude, and in the proper phase, is simultaneously inserted in each quadrant of a



four quadrant cluster. This input power is then compared with power measured at the end of the waveguide run to determine the amount of attenuation present.

3,772,701

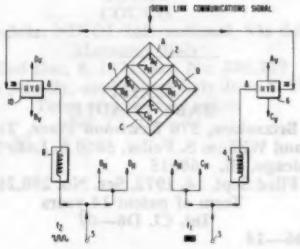
SATELLITE ANTENNA AUTOTRACK SYSTEM PERMITTING ERROR SIGNALS TO APPEAR AT THE EARTH STATION

Ernest James Wilkinson, Sudbury, Mass., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Feb. 11, 1971, Ser. No. 114,451

Int. Cl. G01s *1/02*

U.S. Cl. 343—100 CS **8 Claims**



The invention pertains to satellite antenna autotrack systems which permit error signals to appear at the ground station rather than at the satellite's antenna. A conventional four horn cluster is used to produce pairs of circularly polarized position signals which are detected and processed at the ground station to produce vertical and horizontal error signals. The four horn cluster is simultaneously used to transmit the satellite's down link communications signals. The error signals are transmitted from the ground station to the satellite to reposition the satellite's vertical and horizontal axis to correspond to the line of sight to the ground station.

3,772,702

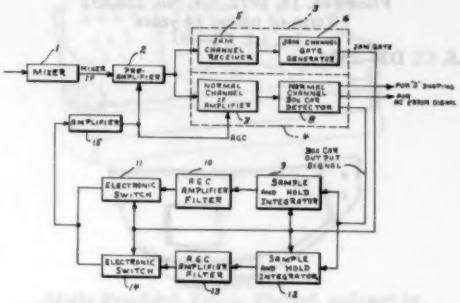
DUAL GATED AGC RADAR

Alan H. Nielsen, Pompton Plains, N.J., assignor to the United States of America as represented by the Secretary of the Air Force

Filed Apr. 29, 1971, Ser. No. 138,744

Int. Cl. H04k *3/00*

U.S. Cl. 343—18 E **2 Claims**



A dual gated AGC radar receiver is provided having independent AGC (automatic gain control) loops for ECM (electronic countermeasure) on and ECM off conditions. A detector provides controlling signals in the ECM on or off condition.

3,772,703

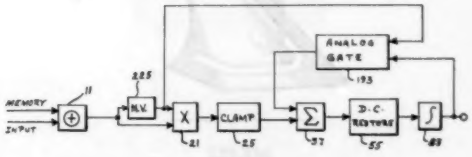
NORMALIZED DECORRELATION DETECTOR

James R. Bogard, Orlando, and Gordon W. Boyles, Winter Park, both of Fla., assignors to the United States of America as represented by the Secretary of the Air Force

Filed Feb. 15, 1972, Ser. No. 226,574

Int. Cl. G01s *9/14*

U.S. Cl. 343—100 CL **3 Claims**



A range closure detector in which new data and data from memory feeds an AND gate and triggers a monostable multivibrator which engables the same AND gate and also a feedback analog gate. The outputs of both gates are summed in a summing amplifier fed to an integrator and then fed back to the feedback analog gate. The correlation output is taken from the integrator which is also fed to the threshold circuits for use in other commands.

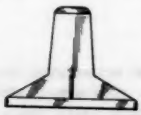
DESIGNS

NOVEMBER 13, 1973

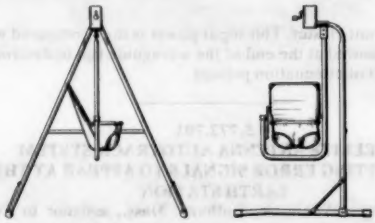
229,127
PROTECTIVE FACE GUARD
Charlotte S. Franklin, Danville, Va., assignor to Engineering for Industry, Inc., Danville, Va.
Filed Feb. 15, 1972, Ser. No. 226,652
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233

229,128
SEWING GUIDE
Edward A. Little, Wolcott, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.
Filed Nov. 10, 1971, Ser. No. 197,635
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—19 A

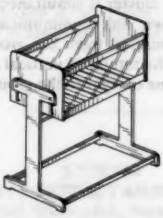
229,129
HANDLE FOR A PAINT BRUSH
Peter Martin, Whitefriars, Broad Lane Hale, England
Filed Dec. 22, 1971, Ser. No. 211,170
Claims priority, application Great Britain June 25, 1971
Term of patent 14 years
Int. Cl. D4—*04*
U.S. Cl. D4—38



229,130
CHILD'S SWING
Edwin E. Foster, 1801 Camp Craft Road, P.O. Box 714, Austin, Tex. 78746
Filed Apr. 11, 1972, Ser. No. 243,116
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—10

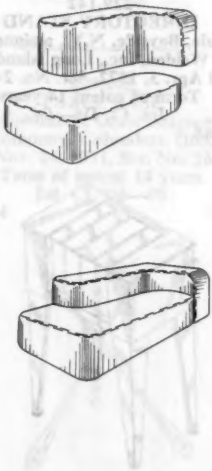


229,131
BABY CRADLE
Joseph J. Brizzolara, 576 Kenwood Place, Teaneck, N.J. 07666, and William S. Feiler, 5050 S. Lake Shore Drive 801, Chicago, Ill. 60615
Filed Sept. 14, 1972, Ser. No. 290,261
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—14

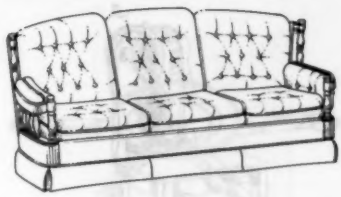


229,132
ADJUSTABLE SUPPORT STAND OR SIMILAR ARTICLE
Miroslav Uroshevich, Cincinnati, Ohio, assignor to Sperti Drug Products, Inc., Cincinnati, Ohio
Filed Mar. 17, 1972, Ser. No. 235,873
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—29

229,133
COUCH
Otello Parpaiola, NIKOL International, Via del Cristo, Manzano, Italy
Filed Dec. 8, 1971, Ser. No. 206,229
Claims priority, application Italy June 8, 1971
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—61

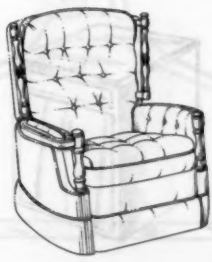


229,134
SOFA OR THE LIKE
Thomas Winrow, Naperville, Ill., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Dec. 28, 1971, Ser. No. 213,233
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



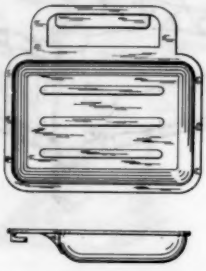
229,135
ARMCHAIR
Maija Ruoslahti, Espoo, Finland, assignor to Joel Mitikka, Lahti, Finland
Filed Mar. 22, 1972, Ser. No. 237,246
Claims priority, application Finland Nov. 1, 1971
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—70

229,136
CHAIR
Thomas Winrow, Naperville, Ill., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Dec. 17, 1971, Ser. No. 209,491
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



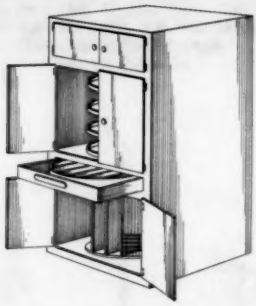
229,137
CHAIR
Richard M. Chapin, Charlotte, N.C., assignor to Dolly Madison Industries, Huntingburg, Ind.
Filed Apr. 20, 1972, Ser. No. 246,111
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—76

229,138
SOAP DISH
Delmas E. Collins, West Lafayette, Ohio, assignor to Jones-Zylon, Inc., West Lafayette, Ohio
Filed May 4, 1972, Ser. No. 250,464
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—89

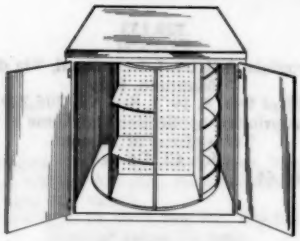


229,139
KITCHEN COUNTER DUAL ACCESS CABINET
Thomas L. Peckenpaugh, P.O. Box 533, Cambria, Calif. 93428
Filed Apr. 20, 1972, Ser. No. 246,117
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164

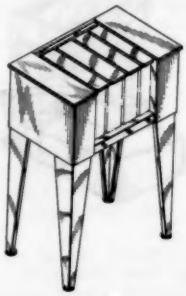
229,140
DUAL ACCESS KITCHEN STORAGE CABINET
Thomas L. Peckenpaugh, P.O. Box 533, Cambria, Calif. 93428
Filed Apr. 20, 1972, Ser. No. 246,116
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164



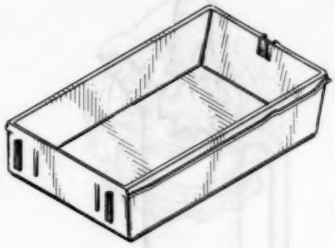
229,141
KITCHEN COUNTER STORAGE CABINET
Thomas L. Peckenpaugh, P.O. Box 533, Cambria, Calif. 93428
Filed Apr. 20, 1972, Ser. No. 246,118
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—167



229,142
DIRECTORY STAND
Morris Pascale, Bayside, N.Y., assignor to Redyref-Pressed & Welded, Inc., Long Island City, N.Y.
Filed Apr. 3, 1972, Ser. No. 240,900
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—184

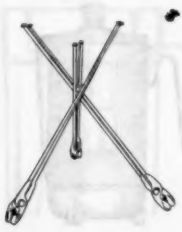


229,143
DRAWER
Frank Holmes, Buena Park, George Read, Glendora, and William A. Moore, West Los Angeles, Calif., assignors to Ajax Hardware Manufacturing Corp., City of Industry, Calif.
Filed Nov. 1, 1971, Ser. No. 194,804
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191

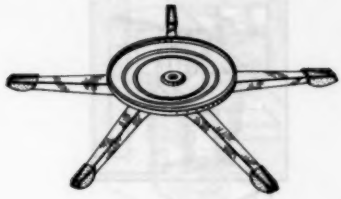


229,144
TABLE BASE
John H. Furber, Columbus, Ohio, assignor to J. H. Furber Company, Columbus, Ohio
Filed Nov. 24, 1971, Ser. No. 202,064
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194

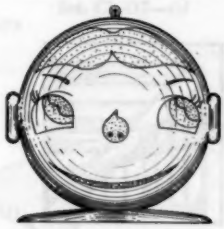
229,145
TABLE BASE
John H. Furber, Columbus, Ohio, assignor to J. H. Furber Company, Columbus, Ohio
Filed Nov. 24, 1971, Ser. No. 202,071
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194



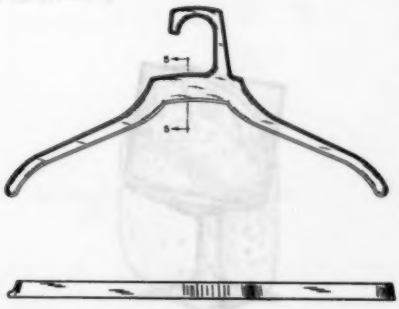
229,146
SWIVEL BASE FOR SUPPORTING A PIECE OF FURNITURE
Charles G. Kipp and Edward L. Hampton, Louisville, Ky., assignors to Lear Siegler, Incorporated
Filed Dec. 23, 1971, Ser. No. 211,819
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196



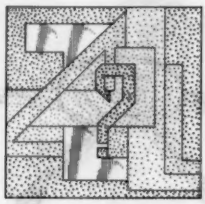
229,147
INFLATABLE PILLOW OR SIMILAR ARTICLE
Fred Snyder, 53 W. 23rd St., New York, N.Y. 10010
Filed Dec. 6, 1971, Ser. No. 205,453
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—202



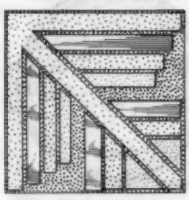
229,148
SHIRT HANGER
Samuel J. Rivman, White Plains, N.Y., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Nov. 15, 1972, Ser. No. 306,635
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—247



229,149
NEEDLEPOINT CANVAS
Marcia Podell, 233 E. 69th St., New York, N.Y. 10021
Filed July 8, 1971, Ser. No. 160,990
Term of patent 3½ years
Int. Cl. D6—*13*
U.S. Cl. D6—269

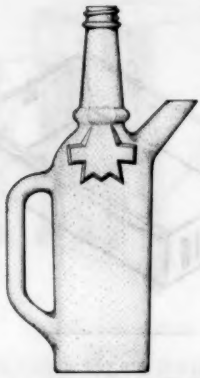


229,150
NEEDLEPOINT CANVAS
Marcia Podell, 233 E. 69th St., New York, N.Y. 10021
Filed July 8, 1971, Ser. No. 160,991
Term of patent 3½ years
Int. Cl. D6—*13*
U.S. Cl. D6—269

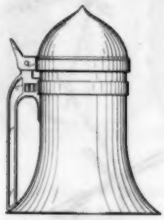


229,151
GOBLET
James Robert McTear, Simsbury, Conn., assignor to Heublein, Inc.
Filed Mar. 23, 1972, Ser. No. 237,600
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—13

229,152
WATER PITCHER
Robert J. Franklin, New York, N.Y., assignor to Schenley Industries, Inc., New York, N.Y.
Filed July 27, 1971, Ser. No. 166,652
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—60



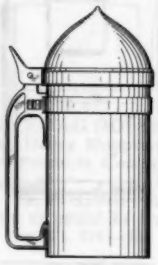
229,153
HOLDER FOR A BEVERAGE CAN
Robert A. Moussette, 4572 Via Marina, Apt. 103, Marina del Rey, Calif. 90291
Filed Mar. 30, 1972, Ser. No. 239,852
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—70



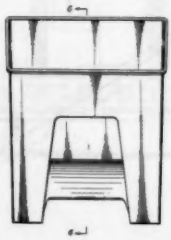
229,154
COFFEE MAKER
Denis J. Jordan, Eau Claire, Wis., assignor to National Presto Industries, Inc., Eau Claire, Wis.
Filed Sept. 15, 1971, Ser. No. 180,938
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—65

229,155
ELECTRIC FOOD WARMER BABY DISH
Ruth G. Ehrlich, 80—26 249th St., Bellerose, N.Y. 11426
Filed Feb. 14, 1972, Ser. No. 226,362
Term of patent 7 years
Int. Cl. D7—*01*
U.S. Cl. D7—69

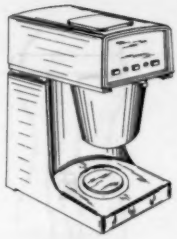
229,156
HOLDER FOR A BEVERAGE CAN
Robert A. Moussette, 4572 Via Marina, Apt. 103, Marina del Rey, Calif. 90291
Filed Mar. 30, 1972, Ser. No. 239,857
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—70



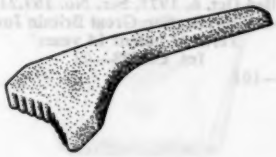
229,157
NAPKIN DISPENSER
Johnson H. Smith, Fort Worth, Tex., assignor to Loma Corp., Fort Worth, Tex.
Filed Dec. 27, 1971, Ser. No. 212,892
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—72



229,158
COFFEE BREWER
Vincent G. Marotta, 2712 Rocklyn Road, Shaker Heights, Ohio 44122
Filed June 29, 1971, Ser. No. 158,146
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—94

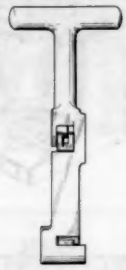


229,159
FISH SCALER
Keith Erin Kinney, 6448 Fireside Drive, Centerville, Ohio 45459
Filed Jan. 17, 1972, Ser. No. 218,658
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—99

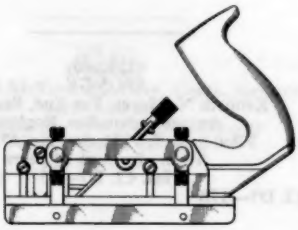


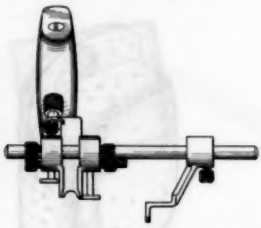
229,160
SPONGE
Kenneth N. Meyer, Far End, Sea Lane, Angmering-on-Sea, England
Filed Sept. 9, 1971, Ser. No. 179,261
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—178

229,161
STRAP TENSIONER
Joseph D. Lewis, Jr., Chattanooga, Tenn., assignor to Universal Packaging, Inc., East Ridge, Tenn.
Filed Jan. 27, 1972, Ser. No. 215,994
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—44



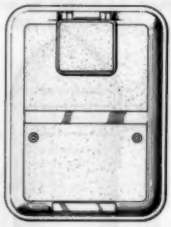
229,162
PLANE
Ronald David Carter, Leamington Spa, England, assignor to Stanley Works (Great Britain) Limited, Woodside, England
Filed Oct. 6, 1971, Ser. No. 187,214
Claims priority, application Great Britain June 23, 1970
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—101



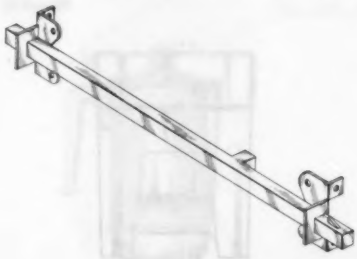


229,163
DOOR CHAIN LOCK
Louis G. Bobrowski, Berlin, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Mar. 7, 1972, Ser. No. 232,654
Term of patent 14 years
Int. Cl. D8—*07, 09*
U.S. Cl. D8—131

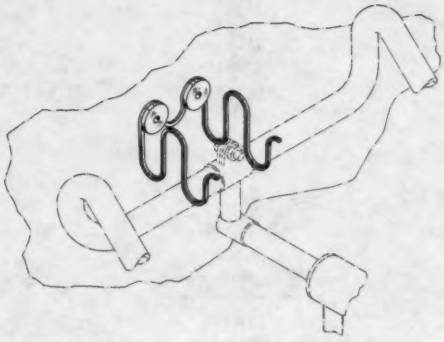
229,164
FACEPLATE FOR A BUILT-IN VACUUM SYSTEM
Felix H. Tevis, South Pasadena, Calif., assignor to Tevis-Campbell Corporation, South Pasadena, Calif.
Filed Mar. 22, 1972, Ser. No. 237,241
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179



229,165
DOOR BARRICADE
Frank A. Wormood, 1609 Castle Road, Odessa, Tex. 79762
Filed Mar. 30, 1972, Ser. No. 239,847
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—203

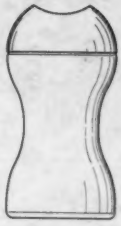


229,166
BICYCLE HANGER
Alexander L. Generalis, 249 S. 10th St., Philadelphia, Pa. 19107, and Michael C. Roberto, 534 Rockland Ave., Mamaroneck, N.Y. 10543
Filed Apr. 7, 1972, Ser. No. 242,291
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235



229,167
PRICE TAG HOLDER
Peter De Korte and Henry Hopper, Wyckoff, N.J., assignors to Empro Products Company, Inc., Paterson, N.J.
Filed Dec. 28, 1971, Ser. No. 213,229
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—245

229,168
COMBINED BOTTLE AND CAP
Bernd Silfang, Dusseldorf, Germany, assignor to Chemische Fabrik Promonta GmbH, Hamburg, Germany
Filed Apr. 4, 1972, Ser. No. 241,101
Claims priority, application Germany Oct. 4, 1971
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—118



229,169
PACKAGING CUP OR THE LIKE
Franklin W. Weiss, 321 Ardsley Road, Longmeadow, Mass. 01106
Filed Nov. 17, 1971, Ser. No. 199,835
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—220

229,170
CARTON
Bernard B. Schipper, Los Angeles, and Christianus L. W. Groeneveld, Alhambra, Calif., assignors to Pakline Corp.
Filed Feb. 22, 1972, Ser. No. 228,456
Term of patent 3½ years
Int. Cl. D9—*03*
U.S. Cl. D9—224

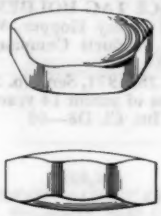
229,171
CONTAINER FOR FOLDED DISPOSABLE TOWELS
Kenneth H. Duhy, Mountain Lakes, N.J. (% Pfizer, Inc., 235 E. 42nd St., New York, N.Y. 10017)
Filed Dec. 22, 1971, Ser. No. 211,171
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D9—240

229,172
POURING SPOUT FOR A BOTTLE OR THE LIKE
Dale R. Khoury, 312 Cogswell Drive, Silver Lake, Wis. 53170, and John J. La Violette, Box 51, Camp Lake, Wis. 53109
Filed July 29, 1971, Ser. No. 167,562
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—277

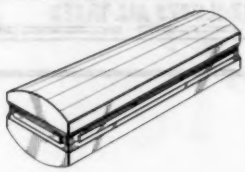
229,173
POURING CAP FOR A BOTTLE OR LIKE CONTAINER
Melvin Alpern, 24 Swan Drive, Swan Acres, Pittsburgh, Pa. 15237
Filed Dec. 30, 1971, Ser. No. 214,508
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—279

229,174
WALL PILLAR STANDARD
Charles R. Suska, Roxbury, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Apr. 24, 1972, Ser. No. 247,231
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6

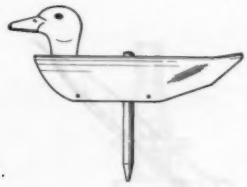
229,175
TABLET
Andrew John Libertone and George Ronald Tomaich, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Filed Nov. 29, 1971, Ser. No. 203,120
Term of patent 14 years
Int. Cl. D28—*01*
U.S. Cl. D16—3



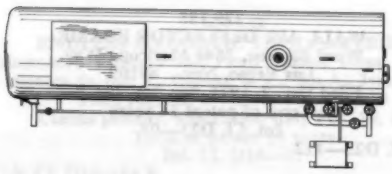
229,176
CASKET
Edward R. Andrus, Jr., Mount Prospect, Dale E. Fahnstrom, Riverside, and James G. Hansen, La Grange, Ill., assignors to Elder Wilbert Corp., Broadview, Ill.
Filed Mar. 20, 1972, Ser. No. 236,538
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D19—1



229,177
WATER FOWL DECOY
George H. Schwartztrauber, 925 9th St., West Des Moines, Iowa 50265
Filed Oct. 10, 1972, Ser. No. 296,083
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—21

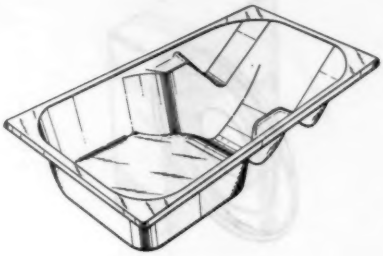


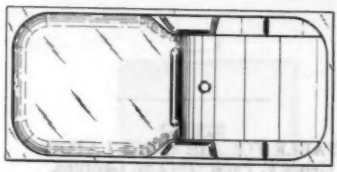
229,178
WATER TREATMENT PLANT OR THE LIKE
James A. Mixon, Jacksonville, Fla., assignor to General Utility Equipment, Inc., Jacksonville, Fla.
Filed Nov. 26, 1971, Ser. No. 202,735
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



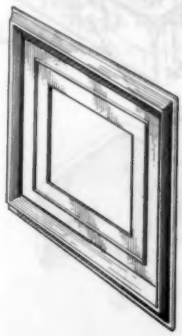
229,179
LAWN SPRINKLER
James Linn Rodgers, 9606 La Serna Drive, Whittier, Calif. 90605
Filed Dec. 1, 1971, Ser. No. 203,945
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—7

229,180
BATHTUB
Allan Möllerstedt, Backaskog, Sweden, assignor to Aktiebolaget Ifoverken
Filed Dec. 10, 1971, Ser. No. 206,985
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



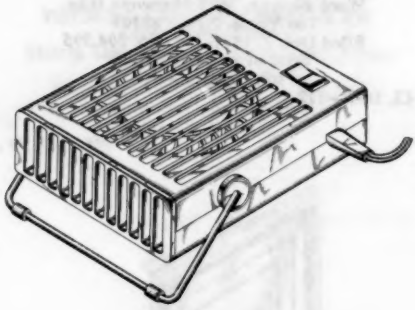


229,181
CEILING AIR DEFLECTOR FRAME
Ward Bledsoe, 3548 Maricopa Way, Las Vegas, Nev. 89109
Filed Dec. 2, 1971, Ser. No. 204,395
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—112

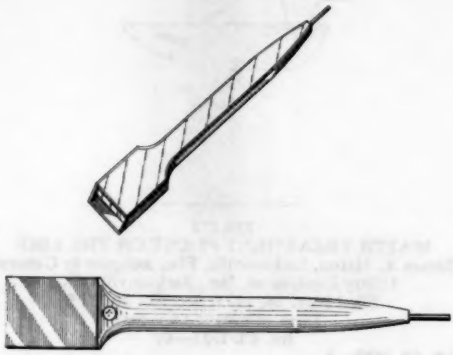


229,182
CEILING AIR DEFLECTOR FRAME
Ward Bledsoe, 3548 Maricopa Way, Las Vegas, Nev. 89109
Filed Dec. 2, 1971, Ser. No. 204,396
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—112

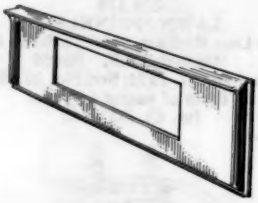
229,183
TABLE TOP AIR CIRCULATOR
Georg F. Papst, 7742 St. Georgen, Black Forest, Germany
Filed Dec. 15, 1971, Ser. No. 208,524
Term of patent 14 years
Int. Cl. D23—*04, 03*
U.S. Cl. D23—155



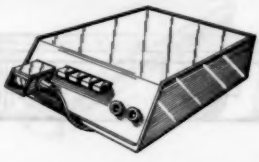
229,184
ELONGATED HAND HELD ELECTRICAL TEST PROBE
George Zindel Brown and Roger Howard Ramsey, Akron, Ohio, assignors to Keithley Instruments, Inc., Solon, Ohio
Filed Dec. 13, 1971, Ser. No. 207,728
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D26—1 Q



229,185
WALL AIR DEFLECTOR FRAME
Ward Bledsoe, 3548 Maricopa Way, Las Vegas, Nev. 89109
Filed Dec. 2, 1971, Ser. No. 204,397
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—112

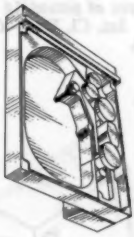


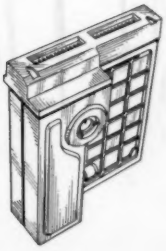
229,186
ELECTRICAL TESTING OR SENSING INSTRUMENT
George Zindel Brown and Roger Howard Ramsey, Akron, Ohio, assignors to Keithley Instruments, Inc., Solon, Ohio
Filed Dec. 13, 1971, Ser. No. 207,714
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D26—1 Q



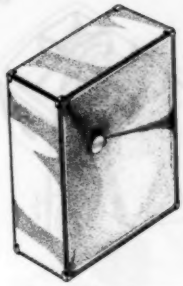
229,187
ELECTRICAL INSULATOR OR SIMILAR ARTICLE
Edward A. Vrabel, Pittsfield, Mass., assignor to General Electric Company
Filed Oct. 27, 1971, Ser. No. 193,241
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—10

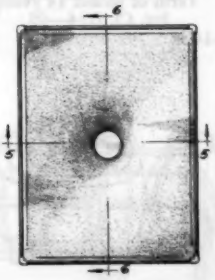
229,188
ENDLESS MAGNETIC TAPE CARTRIDGE
Alessandro Cortona and Piero Musso, Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed July 30, 1971, Ser. No. 167,879
Claims priority, application Italy Feb. 16, 1971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



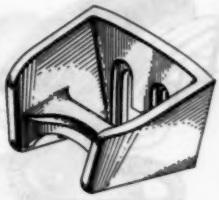


229,189
LOUDSPEAKER CABINET
Seth E. Lover, 12752 Adrian Circle, Garden Grove, Calif. 92640
Filed Oct. 20, 1971, Ser. No. 191,136
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 G

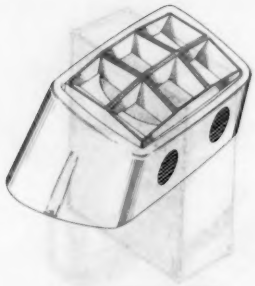




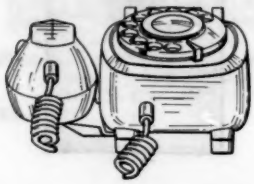
229,190
TELEPHONE HANDSET HANGER
Harper Landell, Fort Washington, Pa., assignor to Speakman Company, Wilmington, Del.
Filed Oct. 22, 1971, Ser. No. 191,972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



229,191
LOUDSPEAKER
William B. Sandler, 70 Clements Road, Newton, Mass. 02158
Filed July 10, 1972, Ser. No. 270,155
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



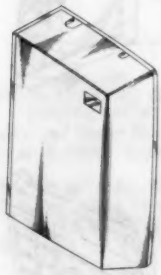
229,192
TELEPHONE OR SIMILAR ARTICLE
Nobuji Nakamura, Tokyo, Japan, assignor to Kabushiki-kaisha Taikodenki Seisakusho, Tokyo, Japan
Filed July 21, 1972, Ser. No. 273,950
Claims priority, application Japan Jan. 24, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



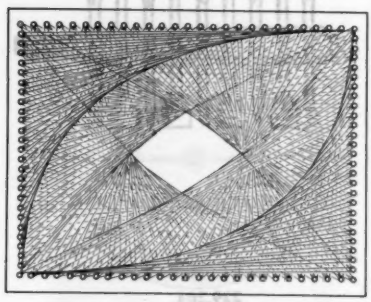
229,193
TELEPHONE OR SIMILAR ARTICLE
Arao Ishikawa, Kamakura, Japan, assignor to Kabushiki-kaisha Taikodenki Seisakusho, Tokyo, Japan
Filed July 21, 1972, Ser. No. 273,951
Claims priority, application Japan Feb. 5, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

229,194
TELEPHONE OR SIMILAR ARTICLE
Arao Ishikawa, Kamakura, Japan, assignor to Kabushiki-kaisha Taikodenki Seisakusho, Tokyo, Japan
Filed July 21, 1972, Ser. No. 273,952
Claims priority, application Japan Jan. 24, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

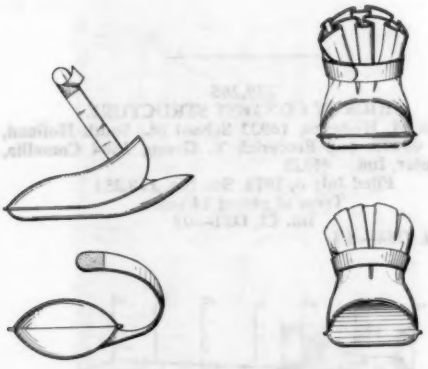
229,195
HOUSING FOR A BATTERY PACK FOR USE WITH A DATA COLLECTION TERMINAL AND THE LIKE
William R. Goodale, Claremont, and Ronald E. Loosen, Malibu, Calif., assignors to MSI Data Corporation, Costa Mesa, Calif.
Filed Dec. 13, 1972, Ser. No. 314,698
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15 A



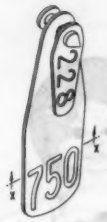
229,196
STRUNG PLAQUE
George Lanson Durden II, 317 Lord Byron Lane, Apt. T–3, Baltimore, Md. 21030
Filed Jan. 24, 1972, Ser. No. 220,558
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A



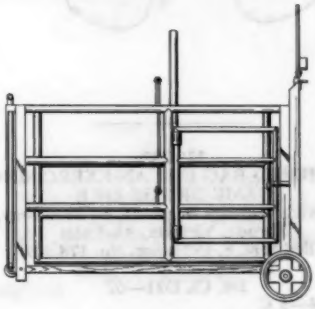
229,197
ANIMAL SLIPPER
James W. Jackson, 7914 W. Country Club Drive, Overland Park, Kans. 66212
Filed Mar. 22, 1972, Ser. No. 237,244
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—34



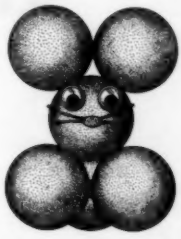
229,198
EAR TAG
Elizabeth Ann Margaret Cockburn, Lymm, England, assignor to Tough Softy Tag Company Limited, Berkshire, England
Filed Jan. 10, 1972, Ser. No. 216,865
Claims priority, application Great Britain July 13, 1971; Nov. 9, 1971
Term of patent 14 years
Int. Cl. D30—*08*
U.S. Cl. D30—43



229,199
HOG CHUTE
Catherine M. Smith, R.R. 1, Bucyrus, Kans. 66013
Filed Feb. 24, 1972, Ser. No. 229,261
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



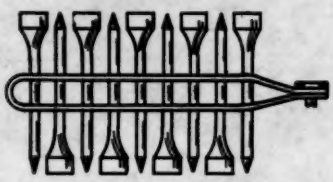
229,200
FANCIFUL MOUSE FIGURINE
Mary K. Doyle, 202 James Road, Glen Burnie, Md. 21061
Filed Nov. 24, 1971, Ser. No. 202,065
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



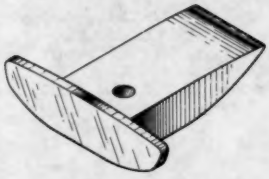
229,201
DOLL
Louis P. Evans, 484 5th Ave., San Francisco, Calif. 94118
Filed Dec. 29, 1971, Ser. No. 213,801
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R

229,202
TETHERED BAG FOR AN EXERCISING GAME OR THE LIKE
Heinrich Wilhelm Bernhard, 84 Broadway, Elwood, Victoria, Australia
Filed Sept. 8, 1971, Ser. No. 178,849
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 C

229,203
COMBINED GOLF TEE HOLDER AND TEES
Edward L. Cicero, 52—62 66th St., Maspeth, N.Y. 11378
Filed Nov. 30, 1971, Ser. No. 203,513
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GT

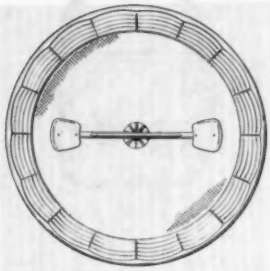


229,204
GOLF CLUB HEAD OR SIMILAR ARTICLE
Eli Romero, R.R. 1, Goddard, Kans. 67052
Filed Apr. 10, 1972, Ser. No. 242,909
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

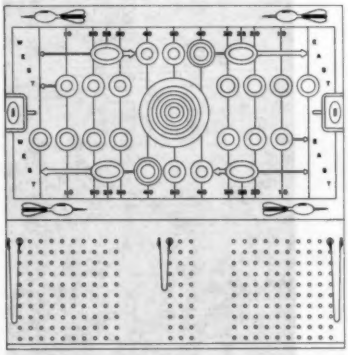


229,205
HOCKEY CONTEST STRUCTURE
Thomas M. Holleran, 16932 School St., South Holland, Ill. 60473, and Frederick T. Green, 1804 Camellia, Munster, Ind. 46321
Filed July 6, 1971, Ser. No. 160,251
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 L

229,206
POOL WITH TWIRLING SEESAW
Joseph Diemond, Simsbury, and Leonard E. Greenberg, West Hartford, Conn., assignors to Coleco Industries, Inc., Hartford, Conn.
Filed Oct. 27, 1971, Ser. No. 193,228
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 F

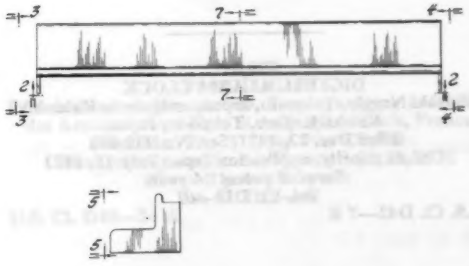


229,207
DART FOOTBALL GAME BOARD
Charles A. Stitzer, 108 S. Main St., Pleasant Gap, Pa. 16823
Filed Jan. 25, 1972, Ser. No. 220,728
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 FG

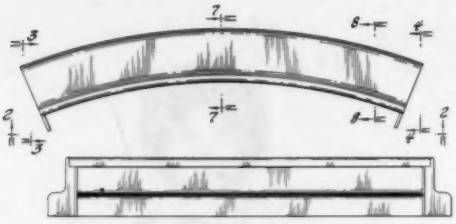


229,208
GOLF PUTTER
Robert H. Phinny, R.R. 2, Fremont, Mich. 49412
Continuation-in-part of abandoned design application Ser. No. 200,668, Dec. 7, 1971. This application Apr. 6, 1972, Ser. No. 241,868
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GC

229,209
LAWN EDGING STRIP
Michael T. Tabone, 24881 Ward St., Taylor, Mich. 48180
Filed May 8, 1972, Ser. No. 251,558
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—1

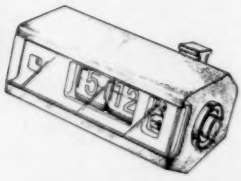


229,210
LAWN EDGING STRIP
Michael T. Tabone, 24881 Ward St., Taylor, Mich. 48180
Filed May 8, 1971, Ser. No. 251,570
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—1 R



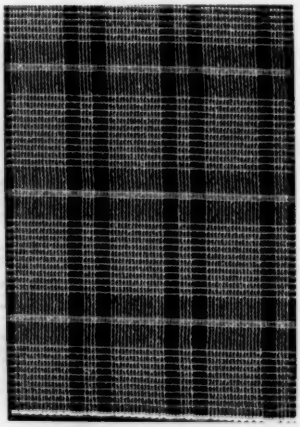
229,211
COMBINED FLOWER AND CANDLE HOLDER
Henry Hulthen, Drottninggatan 33, Helsingborg, Sweden
Filed Apr. 26, 1972, Ser. No. 247,908
Claims priority, application Sweden Oct. 27, 1971
Term of patent 14 years
Int. Cl. D11—*99;* D26—*04*
U.S. Cl. D35—3 R

229,212
DIGITAL ALARM CLOCK
Hideaki Nagata, Tokyo-to, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan
Filed Dec. 27, 1971, Ser. No. 212,890
Claims priority, application Japan July 28, 1971
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R

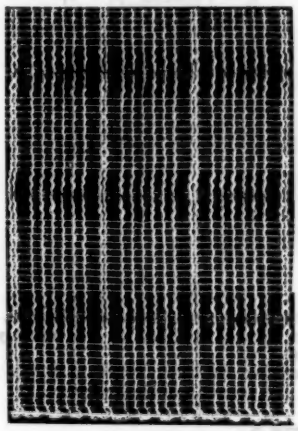


229,213
DIGITAL WATCH
Kazunari Sasaki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed May 26, 1972, Ser. No. 257,478
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D42—8 R

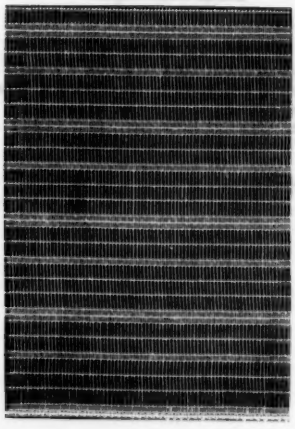
229,214
CURTAIN FABRIC
Peter E. Schroeder, Arni, Switzerland (% Gardisette International AG, 8 Kirchenweg, 8008 Zurich, Switzerland)
Filed Apr. 10, 1972, Ser. No. 242,896
Claims priority, application Germany Oct. 9, 1971
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



229,215
CURTAIN FABRIC
Peter E. Schroeder, Arni, Switzerland (% Gardisette International AG, 8 Kirchenweg, 8008 Zurich, Switzerland)
Filed Apr. 10, 1972, Ser. No. 242,905
Claims priority, application Germany Oct. 9, 1971
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



229,216
CURTAIN FABRIC
Peter E. Schroeder, Arni, Switzerland (% Gardisette International AG, 8 Kirchenweg, 8008 Zurich, Switzerland)
Filed Apr. 10, 1972, Ser. No. 242,895
Claims priority, application Germany Oct. 9, 1971
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E

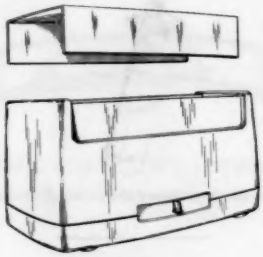


229,217
CIGARETTE LIGHTER
Nobumitsu Masuyama, Shimotsuka, Japan, assignor to Kanazawa Industries and Kabushiki Kaisha Hirota, both of Tokyo, Japan
Filed Feb. 15, 1972, Ser. No. 226,647
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R

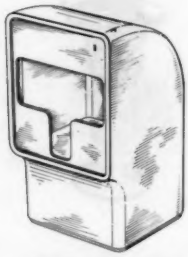
229,218
COMBINED GAS LANTERN AND FUEL BOTTLE THEREFOR
Richard D. Curtis, Benjamin C. Baugh, and Robert R. Deines, Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.
Filed Dec. 23, 1971, Ser. No. 211,828
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R

229,219
FLASHLIGHT
Francis Besnard, Romainville, France, assignor to Societe des Accumulateurs Fixes et de Traction, Paris, France
Filed Mar. 28, 1972, Ser. No. 239,003
Claims priority, application France Sept. 28, 1971
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A

229,220
DENTURE CLEANING UNIT
Arthur J. Pulos, Fayetteville, and Paul B. Sweeney, Syracuse, N.Y., assignors to Cooper Laboratories Inc., Wayne, N.J.
Filed Dec. 2, 1971, Ser. No. 204,407
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D49—11

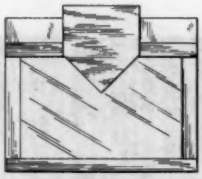


229,221
NEWSPAPER VENDING STAND
Gerald J. Adamson, Scarborough, and Jan W. Kuypers and Ian F. Norton, Toronto, Ontario, Canada, assignors to Don Mills Development Limited, Toronto, Ontario, Canada
Filed Nov. 11, 1971, Ser. No. 198,090
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D52—2 C

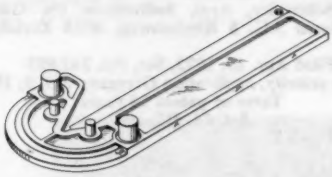


229,222
LINING WEAR GAUGE FOR DISC AND DRUM BRAKES
Robert Turner Paulk, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.
Filed Feb. 22, 1972, Ser. No. 228,471
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R

229,223
EYEGLASS FRAME MEASURING DEVICE
Robert E. Conn, Jr., Hopkins, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.
Filed Mar. 10, 1972, Ser. No. 233,843
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R

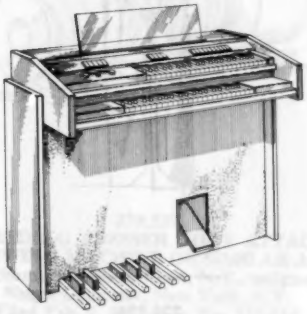


229,224
CENTER SQUARE
Antoni P. Gutowski, New Britain, and Carl C. Stoutenberg, Avon, Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Dec. 20, 1971, Ser. No. 210,303
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 A

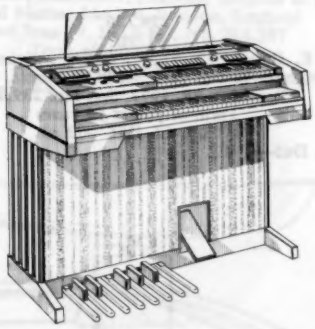


229,225
UTILITY LEVEL
Laird F. Covey, Easton, and Maarten Cornelis de Jong, Canton, Conn., assignors to The Stanley Works, New Britain, Conn.
Filed May 18, 1972, Ser. No. 254,840
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6 A

229,226
ORGAN CONSOLE
Thomas E. Kimble, Covington, Ky., assignor to D. H. Baldwin Company, Cincinnati, Ohio
Filed Feb. 2, 1972, Ser. No. 223,051
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—2

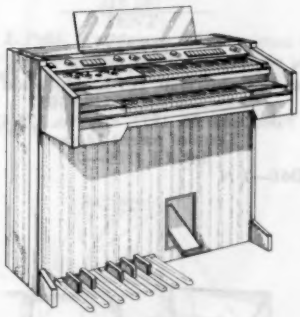


229,227
ORGAN CONSOLE
Thomas E. Kimble, Covington, Ky., assignor to D. H. Baldwin Company, Cincinnati, Ohio
Filed Feb. 2, 1972, Ser. No. 223,052
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—2

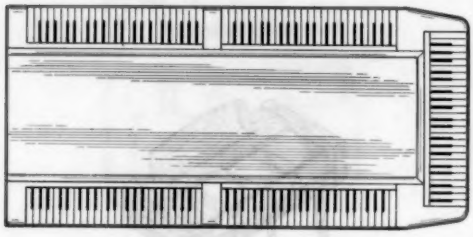


229,228
CABINET FOR KEYBOARD INSTRUMENT
Edward Barczak, Los Angeles, and Adolph D. Lambach, Fountain Valley, Calif., assignors to Opsonar Organ Corporation, Bronx, N.Y.
Original design appplication Jan. 11, 1971, Ser. No. 105,793, now Patent No. 224,270. Divided and this application Mar. 6, 1972, Ser. No. 232,345
Int. Cl. D17—*01*
U.S. Cl. D56—2

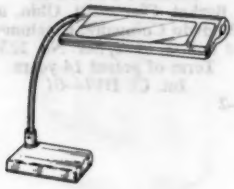
229,229
ORGAN CONSOLE
Dennis J. Barket, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio
Filed Feb. 2, 1972, Ser. No. 223,054
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—2



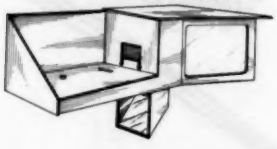
229,230
MULTIPLE KEYBOARD UNIT
Percy Dean Olson, Owatonna, Minn., assignor to Musitronic, Inc., Owatonna, Minn.
Original design application Dec. 14, 1970, Ser. No. 26,453. Divided and this application Nov. 12, 1971, Ser. No. 198,486
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9



229,231
MAGNIFYING LAMP
Aloysius Jacobus Maria Beeren, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 16, 1971, Ser. No. 209,010
Claims priority, application Switzerland June 21, 1971
Term of patent 14 years
Int. Cl. D16—*06;* D26—*05*
U.S. Cl. D57—1 E

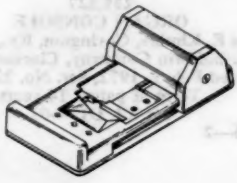


229,232
MOTION PICTURE/SLIDE PROJECTOR CONSOLE
Allan B. Corderman, 161 Ramblewood Road, Moorestown, N.J. 08057
Filed Aug. 26, 1971, Ser. No. 175,426
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N

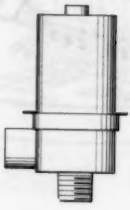


229,233
ROOFING CLIP
Eddie R. Parker, 1515 Winfield Ave., Indianapolis, Ind. 46222
Filed Nov. 18, 1971, Ser. No. 200,267
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D68—1

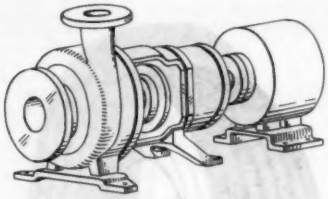
229,234
CREDIT CARD IMPRINTER
Tomokazu Kato, Tokyo, Japan, assignor to W. T. Grant Company, New York, N.Y.
Filed Aug. 4, 1972, Ser. No. 277,877
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 B



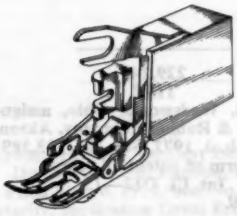
229,235
PUMP
Robert E. Bunch, La Verne, Calif., assignor to Zenith Manufacturing, Inc., South El Monte, Calif.
Filed Mar. 28, 1972, Ser. No. 239,008
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 R



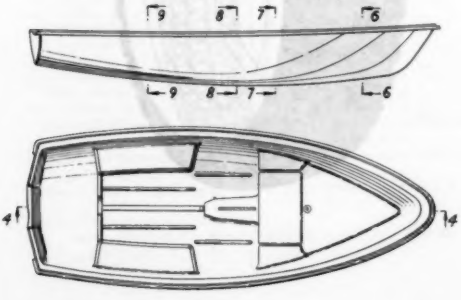
229,236
COMBINED CENTRIFUGAL PUMP AND MOTOR
John H. Doolin, New Providence, N.J., assignor to Worthington Corporation, Harrison, N.J.
Filed May 31, 1972, Ser. No. 258,472
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1



229,237
WORK FEEDING PRESSER FOOT ATTACHMENT FOR A SEWING MACHINE OR SIMILAR ARTICLE
Johann Schumacher, Ridgewood, N.Y., assignor to The Singer Company, New York, N.Y.
Filed Feb. 9, 1972, Ser. No. 225,016
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—2 B



229,238
BOAT
Peter A. Milne, Chichester, England, assignor to Richmond Marine Limited, London, England
Filed June 19, 1972, Ser. No. 264,307
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1 BB



229,239
CASING FOR AN EYELINER BRUSH AND AN EYELASH BRUSH
Allan A. Costa, 682 Udall St., West Islip, N.Y. 11795
Filed Oct. 12, 1971, Ser. No. 188,662
Term of patent 7 years
Int. Cl. D3—*02*
U.S. Cl. D86—10 G

229,240
FUR WRAPPING FOR A PIGTAIL
Marcia Annette Red Fox, 3180 Stark St., Eugene, Oreg. 97402
Filed Feb. 22, 1972, Ser. No. 228,449
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D86—10 J

229,241
TENT
Harold J. Pohl, Washington, Mo., assignor to Kellwood Company, St. Louis, Mo.
Filed July 17, 1972, Ser. No. 272,289
Term of patent 7 years
Int. Cl. D21—*04*
U.S. Cl. D88—3 B

229,242
TENT STAKE
Alden H. Simpson, 54 Pine Grove St., Springfield, Mass. 01119
Filed Mar. 7, 1972, Ser. No. 232,648
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D88—3 B

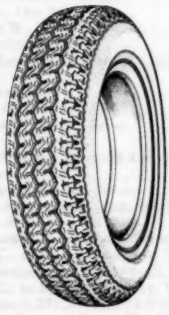
229,243
TIRE
Harold D. Fetty, Birmingham, Mich., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 3, 1971, Ser. No. 204,791
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R

229,244
TIRE
Charles W. Roberts and Dennis B. Granger, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 13, 1971, Ser. No. 207,724
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R

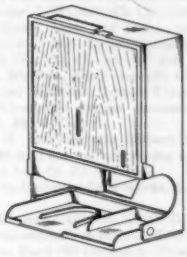
229,245
TIRE
Walter W. Hinkel, Wadsworth, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 3, 1972, Ser. No. 223,389
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R

229,246
TIRE
Harold D. Fetty, Birmingham, Mich., and Arthur L. Finley, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 24, 1972, Ser. No. 229,240
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R

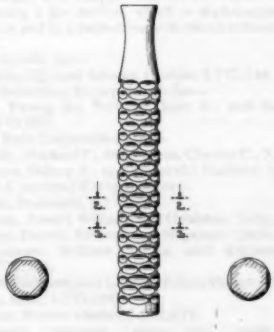
229,247
TIRE
Brian Howard Holmes, Yardley, England, assignor to Dunlop Limited, London, England
Filed Mar. 8, 1972, Ser. No. 233,006
Claims priority, application Great Britain Sept. 15, 1971
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



229,248
LIQUID DISPENSER
Thomas G. Bergstrom, 1312 Appeal Ave., Elmont, N.Y. 11003
Filed Apr. 10, 1972, Ser. No. 242,898
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3 B



229,249
RAZOR HANDLE
Charles Castelli, Philadelphia, Pa., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Nov. 3, 1971, Ser. No. 195,543
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



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Barth, Wayne E., to Pfizer, Inc. 2-Hydroxymethyl-3-benzyloxy-6-pyridinecarboxaldehyde, intermediate for preparing bronchodilators. 3,772,314, Cl. 260-297.00r.

Barthalon, Maurice; Moiroux, Auguste; and Watson, Patrick. Electromagnetic motion imparting means and transporter system embodying the same. 3,771,462, Cl. 104-148.0lm.

Bartkus, Edward A.: *See—*
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Bartmann, Wilhelm; Alpermann, Hans-Georg; and Jochum, Christian, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Analgestic 1-vinylcarbonylpiperazine compounds. 3,772,297, Cl. 260-268.0ph.

Bartmann, Wilhelm; and Alpermann, Hans-Georg, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 1-(1,2-Diphenyl-2-formylvinyl)-4-methylpiperazine and salts with physiologically tolerated acids. 3,772,298, Cl. 260-268.00r.

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Thomasson, David G.; Crosher, Frederick K.; Temple, Michael D.; Bartolmei, Leroy A.; and Seddon, Richard Ian, 3,771,857.

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BASF Wyandotte Corporation: *See—*
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Baskerville, James E.; and Creekman, Charles T., Jr., to Folger Adams Co., a division of Telkee, Inc. Control and response systems and units. 3,772,650, Cl. 340-147.0md.

Bass, Merlyn Duane; and Pettengill, Donald Herbert, to Deere & Company. Bearing. 3,771,846, Cl. 308-238.000.

Bassereau, Justin: *See—*
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Bassett, Douglas Austin: *See—*
Mitchell, James; Bassett, Douglas Austin; Glass, David George; Hoffman, Larry Allan Rodney; Postle, William Arnold; and Johnson, Dennis William, 3,771,356.

Batesky, Donald C., to Eastman Kodak Company. Liquid crystal compositions. 3,772,209, Cl. 252-408.000.

Battelle Development Corporation: *See—*
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Richards, Brynley Thomas; and Battman, Bernard Desmond, 3,771,404.

Batzer, Hans; Habermeier, Juergen; and Porret, Daniel, to Ciba-Geigy AG. Diglycidyl compounds of monohydroxyalkyl hydantoins. 3,772,326, Cl. 260-309.500.

Bauer, Ingeborg: *See—*
Bircher, Johannes; Weidenhagen, Rudolf; Mainz, Uber; Reinicke, Hans; Leonhauser, Senta; and Bauer, Ingeborg, 3,772,433.

Bauer, Theodor: *See—*
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Baxter Laboratories, Inc.: *See—*
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Bayer, Ernst; Mutter, Manfred; Gillessen, Dieter; Kunzi, Hans; and Studer, Rolf, to Hoffmann-La Roche Inc. Homogeneous peptide synthesis. 3,772,264, Cl. 260-112.500.

Beatson Clark & Company Limited: *See—*
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Bechle, Rudolph P., to Potdevin Machine Co. End folding machine. 3,771,280, Cl. 53-32.000.

Beck, Gunther: *See—*
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Beck, James, to Lilly, Eli, and Company. Sulfonamide compounds. 3,772,277, Cl. 260-239.600.

Becker, James M.; and Jackson, William E. Moment monitoring system for boom-cable type cranes. 3,771,667, Cl. 212-39.00r.

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Beer, Ernst. Cathodic protection device. 3,772,179, Cl. 204-197.000.

Beets, Roland H. C.: *See—*
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Bell Telephone Laboratories, Incorporated: *See—*
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Belli, William F. Micro-wave test set an/SPG-51B radar. 3,772,700, Cl. 343-17.700.

Bellinger, Horst: *See—*
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Bennett, Derek Roger; and Shotton, Gordon John, to Lucas, Joseph, (Industries) Limited. Primary metal-air batteries. 3,772,089, Cl. 136-175.000.

Bennett, Harold, to United States of America, Navy. Roughness analyzer. 3,771,880, Cl. 356-209.000.

Bennett, James H., Jr. Process for reclaiming non-metallic material joined together by metal fasteners. 3,771,209, Cl. 29-403.000.

Bennett, Stewart: *See—*
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Benoit, Roland A.; and Curran, John. Bed crank mounting. 3,771,385, Cl. 74-547.000.

Benson, Ernest J.; Tull, Alonzo E.; and Weiveris, William V., to Bentul Equipment Corporation. Method for stacking and sheet interleafing frozen patties. 3,772,040, Cl. 426-420.000.

Benson, Glendon M., to New Process Industries, Inc. Electromechanical latching actuator. 3,772,540, Cl. 310-14.000.

Bentul Equipment Corporation: *See—*
Benson, Ernest J.; Tull, Alonzo E.; and Weiveris, William V., 3,772,040.

Berch, Julian: *See—*
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Berger, Arthur; and Borgaes, Edeltraut E., to Baxter Laboratories, Inc. Method of producing thiazolopyrimidines by reaction of 6-amino-1,3-dimethyluracil with alkyl isothiocyanate. 3,772,290, Cl. 260-256.50r.

Bergomi S.p.A.: *See—*
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Berni, Rene P.; and Grifo, Richard A., to GAF Corporation. Process for washing polyester materials. 3,771,951, Cl. 8-137.000.

Bernier, Robert V., to TRW Inc. Film notcher and cutter. 3,771,402, Cl. 83-459.000.

Berry, Chester R.; and Marino, Salvatore J., to Eastman Kodak Company. Silver halide grains and photographic emulsions. 3,772,031, Cl. 96-108.000.

Berrybart, Inc.: *See—*
De Nocola, Frank; and Vallender, Edward, 3,771,708.

Bertario, Luigi, to Alluminio Maucceri Borghetto S.p.A. Beading and/or screw-threading machine head, for metal caps used for stoppering containers having a pouring mouth. 3,771,285, Cl. 53-334.000.

Berthoumieux, Robert: *See—*
Rousseau, Marcel-Gustave; and Berthoumieux, Robert, 3,771,909.

Bertolacini, Ralph J.; and Kim, Dae K., to Standard Oil Company. Reforming petroleum hydrocarbons with gallium-promoted catalysts. 3,772,183, Cl. 208-65.000.

Bertolacini, Ralph J.; and Kim, Dae K., to Standard Oil Company. Reforming petroleum hydrocarbons with catalysts promoted with gallium and rhenium. 3,772,184, Cl. 208-65.000.

Best, John S.; and Duda, John Larry, to Dow Chemical Company, The. Well structure and method for protecting permafrost. 3,771,590, Cl. 165-1.000.

Bethlehem Steel Corporation: *See—*
Mayer, Edward H.; Schunk, Frederick B.; and Rahn, Hilton N., 3,772,091.
Reinbold, Richard J.; Mateer, Melvin J.; and Muhlhauser, John F., 3,771,775.

Betschart, Robert J., to FMC Corporation. Manifolding for frozen confection machine. 3,771,322, Cl. 62-345.000.

Beyerle, Rudi; Stachel, Ingerburg Lydia Katharina; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, to Cassella Farbwerke Mainkur Aktiengesellschaft. Thiomorpholine-coumarin derivatives. 3,772,280, Cl. 260-243.00b.

Bezrukov, Alexandr Fredorovich; Balykov, Petr Semenovich; Mashkovsky, Arkady Vsevolodovich; and Vasin, Eduard Lvgenievich. Roller conveyor. 3,771,633, Cl. 193-35.00a.

Bharucha, Nanabhai Rustomji; and Ward, John Joseph Bernard. Electrodeposition of metals. 3,772,167, Cl. 204-43.00t.

Bharucha, Nanabhai Rustomji. Electrodeposition of chromium. 3,772,170, Cl. 204-51.000.

Bianchetta, Donald L.; and Lohbauer, Kenneth R., to Caterpillar Tractor Company. Pilot control valve. 3,771,564, Cl. 137-625.630.

Binger, Wayne W.; and Sager, Richard K., to Aluminum Company of America. Aluminum welding. 3,771,214, Cl. 29-488.000.

Bingham, Samuel, Company: *See—*
Brown, James K., 3,771,206.

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Bio-Logics, Inc.: *See—*
McDermott, Clifton Eugene; and Steinicke, Darrell B., 3,771,717.

Birchall, James Derek; and Cassidy, John Edward, to Imperial Chemical Industries Limited. Pre-treatment of metal substrates with complex halogen-containing phosphates of aluminum. 3,772,060, Cl. 117-69.000.

Bircher, Johannes; Weidenhagen, Rudolf; Mainz, Uber; Reinicke, Hans; Leonhauser, Senta; and Bauer, Ingeborg, 1/2 to Suddeutsche, Zucher, mesne and 1/2 to Laevosan Gesellschaft mgH & Co., KG. Treatment of hepatopathias with saccharides. 3,772,433, Cl. 424-10.000.

Bischoff, Vincent E.; and Keur, Robert I., to Dick, A. B., Company. Ink analyzer and compensator. 3,771,568, Cl. 137-805.000.

Bison, Gunter; Janssen, Paul; and Schubel, Hans, to Dynamit Nobel Aktiengesellschaft. Method of obtaining the optical antipodes D(-)- and L( )-alpha-azidophenylacetic acid. 3,772,364, Cl. 260-349.000.

Bivens, Carl F. Ophthalmic lens. 3,771,858, Cl. 351-159.000.

Bjorkman, Harry K., to Occidental Energy Development Company, mesne. Efficiency of high energy density batteries of metal-metal halide-halogen type of boundary layer. 3,772,085, Cl. 136-86.00a.

Black Clawson Company, The: *See—*
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Black, James A., to Superior Concrete Accessories, Inc. Self-contained, articulated, outside corner-forming device for a concrete wall form. 3,771,757, Cl. 249-219.00w.

Black, La Donna Jeanne. Dental care demonstration device. 3,771,227, Cl. 32-71.000.

Black, Richard I.; Hartman, Robert E.; and Tucker, Henry G., to Remington Arms Company, Inc. Take-down archery bow. 3,771,508, Cl. 124-24.000.

Black Sivalls & Bryson Inc.: *See—*
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Blacker, John G.: *See—*
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Blackmore, George R.: *See—*
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Blair, Ronald S., to Texas Instruments, Incorporated. Write ring detector for magnetic recorders. 3,772,662, Cl. 340-174.10g.

Blanco, Louis A.; and Meade, Hazel W., to Commercial Decal, Inc. Ceramic decalcomania bonding agent. 3,772,049, Cl. 106-184.000.

Blatter, Herbert Morton: *See—*
Lucas, Robert Armistead; and Blatter, Herbert Morton, 3,772,291.

Blattner, Hans; and Schindler, Walter; deceased (by Gysin, Leonhard; executor), to Ciba-Geigy Corporation. Derivatives of dibenzo (b,f) pyrrolo (3,4-d) azepine as CNS-depressants. 3,772,348, Cl. 260-326.900.

Blinow, Igor, to Polaroid Corporation. Reflex camera with mirror latch. 3,771,427, Cl. 95-42.000.

Blomberg, Knut Hogo. Switching device for telephone instruments, adapted to alternately be used as lowspeaking and loudspeaking telephones. 3,772,472, Cl. 179-100.001.

Blonde, Pierre. Process for the production of lyophilized effervescent pharmaceutical compositions. 3,772,430, Cl. 424-44.000.

Bloom Engineering Company, Inc.: *See—*
Hovis, James E.; and Finke, Harry P., 3,771,944.

Bloom, John A., to Texas Instruments, Incorporated. Formation of refractory coatings on steel without loss of temper of steel. 3,772,058, Cl. 117-62.000.

Bluethman, Robert G.; and James, Randell L., to International Business Machines Corporation. Method of obtaining correspondence between memory and output. 3,772,655, Cl. 340-172.500.

Blum, Josef, to Sorvall, Ivan, Inc. Mircotome. 3,771,405, Cl. 83-714.000.

Blunt, Harry W., to Hercules, Incorporated. Method of preparing small particles of a solid polymer. 3,772,252, Cl. 260-75.00t.

Blunt, John Wilson: *See—*
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Bobrick Corporation, The: *See—*
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Bock, Willy: *See—*
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Boden, Robert Lee: *See—*
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Boeckmann, Hugo; and Hammernik, William F., to Federal Mfg. Co. Capping apparatus. 3,771,284, Cl. 53-282.000.

Boeing, Paul A. Programmable unijunction fence charger. 3,772,529, Cl. 307-132.000.

Boesenberg, Heinz; Frensch, Heinz; and Lorenz, Harald, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for depolymerizing dicyclopentadiene. 3,772,396, Cl. 260-666.00a.

Bogard, Adrian E.; and DeValeria, Robert E., to Borg-Warner Corporation. Method of selectively electroplating thermoplastic substrates using a strippable coating mask. 3,772,161, Cl. 204-15.000.

Bogard, James R.; and Boyles, Gordon W., to United States of America, Air Force. Normalized decorrelation detector. 3,772,703, Cl. 343-100.0cl.

Boguslaski, Robert Charles: *See—*
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Bohan, Charles F.: *See—*
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Bokerman, Gary N.: *See—*
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Bombardier Limited: *See—*
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Bond, Donald Spencer, to RCA Corporation. Apparatus and method for the automation navigation of a sailing vessel. 3,771,483, Cl. 114-39.000.

Bono, Thomas F., Jr. Juvenile training knife and fork. 3,771,224, Cl. 30-148.000.

Bordovsky, Jaromir: *See—*
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Borggreen, Georg: *See*—
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Borggreen, Georg; Kragh, Jorn; and Laustsen, Erik Holm, to Borggreen, Georg. Method for disposal of refuse by degasifying and gasification thereof. 3,771,263, Cl. 48-209.000.

Borgnat, Daniel; Casa, Henri Della; and Jusseau, Noel, to Institut de Recherches de la Siderurgie Francaise. Tuyere for a blast furnace and a method for operating the tuyere to atomize combustible material fed into the tuyere by a shock wave. 3,771,473, Cl 110-182.500.

Borne, Ronald F., to University of Mississippi, The. Phenylalanine derivatives. 3,772,377, Cl. 260-518.00a.

Bornemann, Jaochim, to Rheinstahl Aktiengesellschaft. Mixer. 3,771,594, Cl. 165-109.000.

Boros, Andor; Helm, Laszlo; Marton, Zsolt; and Szucs, Attila, to Magyar Tudomanyos Akademia Automatizalasi Kutato Intezet. Pneumatic control system with pneumatic logic elements for signal processing. 3,771,569, Cl. 137-816.000.

Borsenberger, Paul M.: *See*—
Guevara, Alfredo R.; and Borsenberger, Paul M., 3,772,011.

Bosch, Robert, G.m.b.H.: *See*—
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Bose, Norman J.; and Sani, Hamid H., to Singer Company, The. Magnetic analog-to-digital encoder. 3,772,675, Cl. 340-347.00p.

Bottemiller, Donald L., to Homecrest Company. Furniture construction. 3,771,583, Cl. 160-327.000.

Boudreau, Robert J.: *See*—
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Bouldin, Thurman N. Non-fatal cock fighting. 3,771,786, Cl. 273-1.00e.

Bourassa, Hugh A.: *See*—
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Bourke, John David, to Robbins & Myers, Inc. Temperature control of stator/rotor fit in helical gear pumps. 3,771,906, Cl. 418-48.000.

Bowermaster, Riley J.; and Becker, Robert H., to Laclede Steel Company. Smoke elbow for electric furnace. 3,772,448, Cl. 13-10.000.

Bowie Industries, Inc.: *See*—
Favor, Robert R., 3,771,301.

Bowser, George Carroll: *See*—
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Boyles, Gordon W.: *See*—
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Braddon, Frederick D., to Sperry Rand Corporation. Marine radar-beacon transponder navigation and collision avoidance system. 3,772,692, Cl. 343-6.00r.

Bramley, Robert K.: *See*—
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Branick, Charles Earl. Earth mover tire bead breaker. 3,771,580, Cl. 157-1.170.

Brassai, Bert, to Bayer Aktiengesellschaft. Process for the anionic polymerization of lactams. 3,772,253, Cl. 260-78.001.

Bratton, Raymond J.; Roberts, Elwyn; and Smerd, Peter G., to Westinghouse Electric Corporation. Pressurized fuel elements for a nuclear reactor. 3,772,147, Cl. 176-68.000.

Braun Aktiengesellschaft: *See*—
Messinger, Werner, 3,771,842.

Braun, Bernard G., to Case, J. I., Company. Vibratory concrete placer. 3,771,897, Cl. 415-72.000.

Braun, Karl. Guide for phono-pick-up. 3,771,797, Cl. 274-23.00a.

Breazeale, Russell E.; and Fikse, Tyman H., to Truckweld Equipment Co. Dump trailer. 3,771,829, Cl. 298-17.00r.

Breer, Karl; and Schulte, Klaus, to Bayer Aktiengesellschaft. Production of foams and homogeneous materials and apparatus therefor. 3,771,963, Cl. 23-252.00r.

Breschinsky, Rene. Setting of wall anchors and analogous objects. 3,771,709, Cl. 227-120.000.

Bretschneider, Hermann: *See*—
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Bretschneider, Hermann; Klotzer, Wilhelm; and Franzmair, Rudolf, to Hoffmann-La Roche Inc. 1-Cyano-2-imino-3,3-diphenylpyrrolidines. 3,772,413, Cl. 260-326.620.

Bridges, Ralph F. Extensible step. 3,771,815, Cl. 280-166.000.

Bridgestone Tire Company Limited: *See*—
Muramatsu, Tateo; Aramaki, Kuninori; and Kondo, Yoshikazu, 3,771,662.

Bright, Charles R. Glass lens ending apparatus for sensing lens holding frames. 3,771,265, Cl. 51-101.01g.

Brison, Robert L., to Whittaker Corporation. Integrally molded locking device. 3,771,686, Cl. 220-4.00r.

British Petroleum Company Limited, The: *See*—
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Brodie, James H. Prefabricated building. 3,771,273, Cl. 52-646.000.

Brogden, Morris H.; and Geronime, Robert L., to Rosemount Inc. Induction heater for fiber processing roll. 3,772,492, Cl. 219-10.60t.

Brosch, Eric Joseph: *See*—
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Brossi, Arnold; Kloetzer, Wilhelm; and Teitel, Sidney, to Hoffmann-La Roche Inc. Rheadan-type alkaloids and the preparation thereof. 3,772,327, Cl. 260-340.500.

Brotzmann, Karl: *See*—
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Brown, Barry M.; and Ray, Elbert L., to Eastman Kodak Company. Method for treating reverse osmosis membranes. 3,772,072, Cl. 117-144.000.

Brown Boveri & Company Limited: *See*—
Bachmann, Kurt; Hofer, Franz; and Schuler, Claus, 3,771,221.

Brown, Dale M.: *See*—
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Brown, Harvey A.; Vogel, Herward A.; and Sandberg, Carl L., to Minnesota Mining and Manufacturing Company. Polyether/polyarylsulfones. 3,772,248, Cl. 260-49.000.

Brown, Harvey A., to Minnesota Mining and Manufacturing Company. Aromatic fluoroaliphatic-linked polysulfonate esters. 3,772,251, Cl. 260-49.000.

Brown, James K., to Bingham, Samuel, Company. Can coating roller. 3,771,206, Cl. 29-129.000.

Brown, Leslie C., to General Electric Company. Method for construction of plastic enclosure. 3,772,110, Cl. 156-73.000.

Brown, Melancthon S., to Chevron Research Company. Controlling aqueous microorganisms with N-polyhalovinylthio carboxamides. 3,771,990, Cl. 71-66.000.

Brown, Melancthon S., to Chevron Research Company. Controlling aqueous microorganisms with N-polyhalovinylformamides. 3,771,991, Cl. 71-67.000.

Brown, Melancthon S., to Chevron Research Company. N-Aryl-N-alkyl-N'-arylthio ureas as herbicides. 3,771,993, Cl. 71-98.000.

Brown, Ralph L., to Hoover Company, The. Non-slip handle to bail retaining means. 3,771,885, Cl. 403-379.000.

Brown, Vernon E., to Teletype Corporation. Bit rate converter. 3,772,653, Cl. 340-172.500.

Brucken, Byron L., to General Motors Corporation. Heat motor power unit for domestic waste compactor. 3,771,437, Cl. 100-52.000.

Bruckner, Ronald L.; and Rex, Don P., to National Cash Register Company, The. Trapezoidal waveform generator circuit. 3,772,533, Cl. 307-261.000.

Brumfield, Robert C. Blood transport membrane pump. 3,771,658, Cl. 210-186.000.

Brumfield, Robert C. Pulsator pump and heat exchanger for blood. 3,771,899, Cl. 415-90.000.

Brunie, Jean-Claude; Costantini, Michel; Crenne, Noel; and Jouffret, Michel, to Rhone-Poulenc S.A. Process for producing ε-hydroxycaproic acid. 3,772,375, Cl. 260-533.00c.

Brunk, Jack Laurence; and Brosch, Eric Joseph, to Johns-Manville Corporation. Apparatus and method for accelerating strands. 3,771,701, Cl. 226-1.000.

Bruns, Carl Newton, to Stauffer Chemical Company, mesne. Silicone rubber composition yielding a structural ash on combustion. 3,772,239, Cl. 260-37.0sb.

Brunsell, Paul A., to Flume Stabilization Systems, Inc. Quick-dump free-surface stabilizer. 3,771,485, Cl. 114-125.000.

Brunswick Corporation: *See*—
Hungerford, Daniel Comstock, 3,771,486.

Buce, Walter F., to Phillips Petroleum Company. Method for restricting fluid pathways through a subterranean formation zone. 3,771,599, Cl. 166-295.000.

Buchel, Karl-Heinz: *See*—
Regel, Erik; and Buchel, Karl-Heinz, 3,772,315.

Buchholz, Bernard, to Pennwalt Corporation. Cycloaliphatic sulfides for stabilizing polyolefins. 3,772,246, Cl. 260-45.95r.

Buchstaller, Anton, to Dornier A.G. Combination gyroplane. 3,771,924, Cl. 416-121.000.

Buchtel, Michael E. Liquid control device. 3,771,420, Cl. 91-49.000.

Buck, Ollie G.; and Hsieh, Henry L., to Phillips Petroleum Company. Curing ABC Terpolymers. 3,772,402, Cl. 260-830.00r.

Buck, Willard E.: *See*—
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Buckbee-Mears Company: *See*—
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Buckeye Steel Castings Company: *See*—
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Buckman Laboratories, Inc.: *See*—
Pera, John D.; and Johnson, Betty S., 3,771,989.

Budilov, Boris Alexandrovich: *See*—
Petrov, Jury Ivanovich; Budilov, Boris Alexandrovich; and Zaitsev, Anatoly Danilovich, 3,772,532.

Budizich, Tadeusz, to Weatherhead Company, The. Three slope proportioning valve. 3,771,837, Cl. 303-6.00c.

Buehler, Arthur: *See*—
Zickendraht, Christian; Buehler, Arthur; and Schuetz, Hans Ulrich, 3,772,321.

Bueler, Richard C., to Wagner Electric Corporation. Control valve. 3,771,836, Cl. 303-6.00c.

Bueno, Aldalberto Costa De Campos. Child's coaster. 3,771,811, Cl. 280-87.04a.

Bullman, Allan R., to Union Carbide Corporation. Vinyl paste sealant composition. 3,772,237, Cl. 260-31.80m.

Bulman, Peter Joseph: *See*—

Allard, Robert; Bulman, Peter Joseph; Clarke, John Lawton; Prior, John Roger; and Sampson, Donald Frederick, 3,772,693.

Bulow, Manfred: *See—*
Forster, Hans-Joachim M.; Katz, Klaus; Bulow, Manfred; Scheuter, Anton; Bordovsky, Jaromir; and Wuchter, Gerhard, 3,771,383.

Bunker Ramo Corporation: *See—*
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Burcliff Industries, Inc.: *See—*
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Burdidge, Colin, to Beecham Group Limited. Precipitation of virus particles. 3,772,149, Cl. 195-1.500.

Burke, John A., to Greene, Tweed & Co., Inc. Sealing device. 3,771,801, Cl. 277-188.000.

Burkhardt, Daniel J.: *See—*
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Burlington Industries, Inc.: *See—*
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Sheldon, William Joseph; and Gaylard, Bernard, 3,771,760.

Burns, Carmen D., to Texas Instruments, Incorporated. Liquid crystal display panel. 3,771,855, Cl. 350-160.01c.

Burns, Eugene A.: *See—*
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Hennessey, William M.; and Schorno, Hector R., 3,772,834.
Thomas, John D., 3,771,705.
Triplett, Gerald H.; and Dowds, Thomas A., 3,772,573.
Wallace, Harry L., 3,771,441.

Burroughs Wellcome Co.: *See—*
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Roth, Barbara, 3,772,289.

Burrows, Robert Beck; and Phillips, Arthur Page, to Burroughs Wellcome Co. Pyrrylvinylthiazolium derivatives. 3,772,287, Cl. 260-240.00e.

Busch, John F., to GTE Automatic Electronic Laboratories Incorporated. Digit impulse scanning arrangement for a communication switching system. 3,772,476, Cl. 179-18.0ab.

Bush, Clarence C., to United States of America, Army. Vee-belt spring-O-matic power transmission. 3,771,377, Cl. 74-230.17a.

Busselaar, Cornelis A.: *See—*
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Buttery, Ron G.: *See—*
Gjadagni, Dante G.; Buttery, Ron G.; and Seifert, Richard M., 3,772,039.

Buxton, Ralph, to United States of America, Army. Multi-circuit safing and arming switch. 3,771,457, Cl. 102-70.20r.

Byers, Jim L. Self-centering horizontally translatable support/hold-down apparatus for building structures and the like. 3,771,270, Cl. 52-167.000.

Byrwa, John J.: *See—*
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Cabaret, George F.; Holland, Andrew M.; Morris, Joseph P.; Pester, William B.; and Osborne, Harold A., to Mattel, Inc. Audio visual toy. 3,771,255, Cl. 46-33.000.

Cable Electric Products, Inc.: *See—*
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Cain, Jay M., to Hoover Company, The. Tool caddy. 3,771,191, Cl. 15-257.00a.

Caldwell, Samuel I.; and Wanner, John C., to Caterpillar Tractor Company. Modular brake assembly. 3,771,627, Cl. 188-170.000.

Caley, Samuel Scott: *See—*
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Cameron Iron Works, Inc.: *See—*
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Campagnuolo, Carl J.; and Horton, Billy M., to United States of America, Army. Fluidic generator. 3,772,541, Cl. 310-15.000.

Campbell, John Scott; Deminge, Philip H.; and Epstein, Aaron M., to Universal Laboratories, Incorporated. Method for decoratively silk screen printing candles. 3,771,445, Cl. 101-129.000.

Campbell, Lester L., to Hughes Aircraft Company. Stepped length lead locator and trimmer. 3,771,207, Cl. 29-203.00h.

Canadian Patents and Development, Limited: *See—*
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Candor, James T.: *See—*
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Candor, Robert R.; and Candor, James T. Method and apparatus for treating sheet-like material with fluid. 3,771,236, Cl. 34-16.000.

Capellman, John J.: *See—*
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Capes, Charles Edward; Coleman, Richard D.; and Thayer, William L., to Canadian Patents and Development, Limited. Agglomerating with independently rotatable screen and drum. 3,771,971, Cl. 23-313.000.

Capintec, Inc.: *See—*
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Carborundum Company, The: *See—*
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Economy, James; Cottis, Steve G.; and Nowak, Bernard E., 3,772,250.
Sweet, Larrie H., 3,771,467.

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Carey, John Gerard, to Imperial Chemical Industries Limited. Manufacture of 1,1'-disubstituted-4,4'-bipyridylium salts. 3,772,310, Cl. 260-295.0am.

Carignan, Lucien W., to New England Malleable Iron Company. Automated apparatus for machining parts on a rotatable arbor. 3,771,390, Cl. 82-2.500.

Carlsmith, Lawrence A.: *See—*
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Carlson, Herbert L.: *See—*
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Carlson, Walter H.; and Ehrenreich, Leo C., to Carborundum Company, The. Process for producing reinforced carbon and graphite bodies. 3,772,115, Cl. 156-148.000.

Carman, Alexander J., to Stevens, J. P., & Co., Inc. Apparatus for feeding filling threads to a warp knitting machine. 3,771,330, Cl. 66-84.00a.

Carn, Patrick. Device for transporting loads on uneven or shifting ground, and also for launching small boats. 3,771,809, Cl. 280-47.13b.

Carp, Alan E.; and Mohar, Douglas D., to General Mills, Inc. Method of making a simulated meat product. 3,772,035, Cl. 426-274.000.

Carr, Norman L.; and Ko, Daniel Y. C., to Gulf Research & Development Company. Process for preparing a monoalkyl aromatic. 3,772,398, Cl. 260-671.00p.

Carter, Cecil O.: *See—*
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Caruso, Gerald L.: *See—*
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Casa, Henri Della: *See—*
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Case, J. I., Company: *See—*
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Casler, David H., to International Business Machines Corporation. Scan angle multiplier of constant aperture. 3,771,850, Cl. 350-6.000.

Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
Beyerle, Rudi; Stachel, Ingerburg Lydia Katharina; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, 3,772,280.
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Catalyst Research Corporation: *See—*
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Bahr, Russel F.; Jankovsky, William O.; Johnson, William G.; and Kolb, Duane V., 3,771,380.
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Cathers, William P., to PPG Industries, Inc. Glass turnover and packing device. 3,771,671, Cl. 214-6.00c.

Cathers, William P., to PPG Industries, Inc. Glass turnover and packing device. 3,771,680, Cl. 214-152.000.

Cauffiel, Ford B. Tapered pole and method and apparatus for producing same. 3,771,978, Cl. 29-193.000.

Cavanagh, John R., to Logic Systems Corporation, Limited. Direct melt injection casting centre. 3,771,588, Cl. 164-337.000.

Cease, Vincent J.; and Thomas, Samuel C., Jr., to Continental Oil Company. Method for preparing overbased oil soluble compositions. 3,772,198, Cl. 252-32.7hc.

Cellarius, Hans-Joerg: *See—*
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Cenker, Moses: *See—*
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Centre d'Etudes Techniques des Industries de l'Habillement: *See—*
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Cerny, Jindrich: *See—*
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Cerri, Egidio: *See—*
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Chacos, Nicholas G. Safety bottle cap. 3,771,682, Cl. 215-9.000.
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Chandler Evans, Inc.: *See—*
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Chandor, Keith F. Litter and waste receptacle for small pet animals. 3,771,493, Cl. 119-1.000.
Chandross, Edwin Arthur; and Shanrorf, Theodore Arthur, to Bell Telephone Laboratories, Incorporated. Fabrication of thin film devices. 3,772,104, Cl. 156-18.000.
Chang, Clarence D.; Naro, Paul A.; and Silvestri, Anthony J., to Mobil Oil Corporation. Catalyst for the demetalation of a hydrocarbon charge stock. 3,772,185, Cl. 208-251.00h.
Chapuis, Robert, to Etablissements Ruby. Sanitary napkin having compressed core. 3,771,525, Cl. 128-290.00r.
Chardon, Felix A. Electromagnetic indicator having rotating sphere. 3,772,686, Cl. 340-373.00r.
Charney, Andrew. Conveyorized farming system. 3,771,258, Cl. 47-1.200.
Chemetron Corporation: *See—*
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Chen, Chi C.; and Matchett, Robert W., to Hammermill Paper Company. Paper for graphic arts. 3,772,141, Cl. 162-145.000.
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Christena, Ray C.; and Johnston, Earnest L., to Vulcan Materials Company. Production of polyesteramides from aziridine salts. 3,772,229, Cl. 260-22.00r.
Christian, Donald K.; and Lovin, Joseph R., to Hunt, Rodney, Company, mesne. Tubular fabric inspection machine. 3,771,201, Cl. 26-70.000.
Christiansen, Paul, to Warner & Swasey Company, The. Data verification for electronic knitting machine. 3,772,647, Cl. 340-146.1ab.
Chubb Industries Limited: *See—*
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Chumbres, Louis G.; and Rudy, George J., to International Business Machines Corporation. Landless plates-through hole photoresist making process. 3,772,101, Cl. 156-11.000.
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Clark, Peter Stanley, to Foseco International, Limited. Titanium oxides in electroslag processes. 3,771,997, Cl. 75-10.00r.
Clark, William H.; and Hays, William R., to Dow Corning Corporation. Process of coating metal substrates with silicone elastomer. 3,772,066, Cl. 117-132.0bs.
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Clasper, Thomas; Hutton, Wilfred H.; Kessinger, Orville E., Jr.; Randour, Victor; and Simpson, Fred E., to Caterpillar Tractor Company. Track idler wheel. 3,771,843, Cl. 305-21.000.
Claywell, James R. Tool chest. 3,771,848, Cl. 312-350.000.
Clementi, Anacleto, to Snam Progetti, S.p.A. Process for recovering polymers from organic solutions. 3,772,262, Cl. 260-94.700.
Clendenen, Ronald L., to Shell Oil Company. Rehydration and pressure-sintering of hot-pressed alumina structures. 3,772,416, Cl. 264-332.000.
Cleybergh, John, to Dick, A. B., Company. Clean fluid washing system for duplicating machines and the like. 3,771,450, Cl. 101-425.000.
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Close, James Garth. Wheel retarder. 3,771,628, Cl. 188-189.000.
Clucker, Richard V. Control system for refuse handling apparatus. 3,771,674, Cl. 214-83.300.
Coal Industry (Patents) Limited: *See—*
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Conley, Grant W., to Sanders Associates, Inc. Character display system. 3,772,676, Cl. 340-324.00a.
Conner, William R., Jr., to Kellwood Company. Punch-tape-controlled sewing apparatus. 3,771,477, Cl. 112-121.120.
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Conover, Lloyd H.; and Woodward, Robert B., to Pfizer, Inc. 3,4,10-Trioxo octahydroanthracene-2-aminoacetic acids and derivatives thereof. 3,772,363, Cl. 260-351.000.
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Conti, Robert F.; Dunham, James D.; and Cosnell, Michael P., to Follett Corporation. Ice diverter valve and control system therefor. 3,771,560, Cl. 137-609.000.
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Continental Carbon Company: *See—*
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Continental Oil Company: *See—*
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Cormier, William F., to United States of America, Navy. Torpedo presetting system. 3,772,581, Cl. 318-685.000.
Cornelius, Dieter; Von Brachel, Hanswilli; and Bender, Heinz, to Cassella Farbwerke Mainkur Aktiengesellschaft. 2-Cyano-4-nitro-6-methylsulfonyl-1-[4'-diethylamino -2'-acetylamino-phenylazo]-benzene. 3,772,267, Cl. 260-207.100.
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Into, Henry A.; and Costello, Richard L., 3,771,415.
Costich, Dale W. Process for making pigmented art objects. 3,772,421, Cl. 264-74.000.
Cottis, Steve G.: *See—*
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Courtright, Burr, to CH_2, Inc. Winch driven water spray irrigation device. 3,771,720, Cl. 239-189.000.
Cowpland, Michael C. J.; and Foss, Richard C., to Microsystems International Limited. Threshold circuit for tone-ringer. 3,772,470, Cl. 179-84.00t.
Coyne, Francis P., to Ingersoll-Rand Company. Motorized tool assembly for drill rods. 3,771,389, Cl. 81-54.000.
Cramp, Donald: *See—*
Lack, Bryan Edward Charles; and Cramp, Donald, 3,771,692.
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Creed, Sherman H.; Huber, John R.; and Hendriks, Johan, to FMC Corporation. Transition path for filling machine. 3,771,574, Cl. 141-1.000.
Creekman, Charles T., Jr.: *See—*
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Crespo, Carlos A. Connecting flange arrangement of submersible pump for fixed discharge outlet. 3,771,914, Cl. 417-360.000.
Crockett, Cyril C. Combination golf club and turf repair implement. 3,771,794, Cl. 273-162.00f.
Crosher, Frederick K.: *See—*
Thomasson, David G.; Crosher, Frederick K.; Temple, Michael D.; Bartolmei, Leroy A.; and Seddon, Richard Ian, 3,771,857.
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Crowe, Talmadge L., to Baker Oil Tools, Inc. Dual safety valve method and apparatus. 3,771,603, Cl. 166-314.000.
Crown Cork & Seal Company, Inc.: *See—*
Wright, George W., 3,771,344.
Crumlish, Bernard J., 40% to McKean, Edwin M. and 20% to Cullen, Edward G. Simulated golf game apparatus. 3,771,792, Cl. 273-134.0cg.
Cryder, John R.; Erickson, Rodney R.; Lohbauer, Kenneth R.; and Scheidt, James E., to Caterpillar Tractor Company. Hydrostatic drive control system. 3,771,310, Cl. 60-19.000.
Crysler Corporation: *See—*
Hunter, William A., 3,771,690.
CSF-Compagnie Generale de Telegraphie Sans Fil: *See—*
Tribes, Rene, 3,772,098.
Culberson, Donald L., to Tobias, Jaromir. Radial pump or motor with stabilized pintle. 3,771,423, Cl. 91-497.000.
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Culver, Irven H., to Primus Mfg., Inc. Friction wheel measuring device. 3,771,228, Cl. 33-141.00r.
Cumming, James C., to Rockwell International Corporation. Wheel speed sensor. 3,772,549, Cl. 310-168.000.
Cumpston, Edward H., Jr. Solid waste opening machine. 3,771,647, Cl. 209-73.000.
Cumpston, Edward H., Jr. Pulper. 3,771,732, Cl. 241-46.110.
Curran, John: *See—*
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Curran, John R., to Foxboro Company, The. Three way control valve. 3,771,562, Cl. 137-625.400.
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Dabal, Robert: *See—*
Shur, Eliakum Gustave; and Dabal, Robert, 3,772,062.
Dahlquist, Emil F. Grate. 3,771,511, Cl. 126-137.000.
Dai Nippon Toryo Kabushiki Kaisha: *See—*
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Hornung, Walter, 3,771,617.
Dall'Asta, Gino; Meneghini, Pietro; and Gennaro, Ugo, to Montecatini Edison S.p.A. High molecular weight substituted (CO) polyalkamers and process for preparing same. 3,772,260, Cl. 260-88.20f.
Damerow, Gunter Karl, to Alfa-Laval AB. Method of making butter. 3,772,447, Cl. 99-119.000.
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Danfoss A/S: *See—*
Ohrberg, Carl Verner; and Petersen, Carsten Georg Otto, 3,771,905.
Daniel, John Lewis, to Du Pont de Nemours, E. I., and Company. Bonded nonwoven sheet bearing a lubricating composition of a liquid polysiloxane and a liquid polyoxypropylene compound. 3,772,069, Cl. 117-138.80e.
Danline Manufacturing Company: *See—*
Horton, John P.; Kagan, Avihu; and Sulser, Troy S., 3,771,189.
Dansereau, Raymond C. Body sail. 3,771,181, Cl. 9-329.000.
Darling, Richard Henry; and Shine, William P., to Dual-Lite Company. Self-contained emergency lighting units and adjustable swivel assemblies. 3,772,527, Cl. 307-66.000.
Dasi Industries, Inc.: *See—*
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Data General Corporation: *See—*
Schulz, Max; and Grasso, Carmen P., 3,772,666.
Data Tactics, Inc.: *See—*
Notto, Leonard A., 3,771,890.
Davidson, Brian Y. Partitioned tray having tabs, for pies and the like. 3,771,713, Cl. 229-27.000.
Davies, Elmer S., to Dasi Industries, Inc. Milk sterilizing apparatus. 3,771,434, Cl. 99-454.000.
Davies, Paul, to Ford Motor Company. Fuel injection system. 3,771,917, Cl. 417-289.000.
Davis, Charles W., to Stanadyne, Inc. Fuel injection pump and automatic timing means therefor. 3,771,506, Cl. 123-139.0aq.

Davis, Curtis W., Jr.; and Fern, Robert W., to Libbey-Owen-Ford Company. Apparatus for conveying a glass ribbon. 3,771,987, Cl. 65-172.000.

Davis, Stanley P., to Motorola, Inc. Epitaxial method for the fabrication of a distributed semiconductor power supply containing a decoupling capacitor. 3,772,097, Cl. 148-175.000.

Dawans, Francois; and Amigues, Pierre, to Institut Francais du Petrole des Carburants et Lubrifiants. Manufacture of amorphous polybutadiene with a high content of 1,2 units. 3,772,263, Cl. 260-94.300.

Dawidowicz, Jan; and Ferraro, Frank A., to Warner-Lambert Company. Bonded blade cartridges and a cartridge dispensing system. 3,771,223, Cl. 30-40.000.

Dawson, James A., to McDonnell Douglas Corporation. Swaging tool. 3,771,343, Cl. 72-402.000.

De Antoni, Jacques; and Eche, Raymonde, to Les Laboratories Bruneau & Cie. Phenoxy-acetamides. 3,772,356, Cl. 260-471.00r.

De Baillie, Arnold A.: *See—*
Sorenson, Charles E.; Stubblefield, Clyde D.; De Baillie, Arnold A.; Bramley, Robert K.; and Bourassa, Hugh A., 3,771,296.

De Baynast, Regis, to Institut Francais du Petrole, des Carburants et Lubrifiants et Entreprise de Recherches et d'Activities Petrolieres. Process for manufacturing enzymes from hydrocarbons. 3,772,152, Cl. 195-66.00r.

De Boer, Charles D.: *See—*
Luckey, George W.; and De Boer, Charles D., 3,772,027.

De Bray, Harold W., to United States Steel Corporation. Apparatus for operating a blast furnace. 3,772,504, Cl. 235-151.100.

De Broutelles, Roger; and Duchene, Louis, to Etablissements Pennel & Flipo. Process for the preparation of a porous plastics material and the product resulting therefrom. 3,772,223, Cl. 260-2.5ay.

De Dobo, Aranka Elisabeth: *See—*
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De Dobo, Tibor Louis, to De Dobo, Aranka Elisabeth. Rotary piston engine with multi explosion chambers. 3,771,501, Cl. 123-8.450.

De Harak, Rudolph, to Corchia de Harak, Inc. Inflatable art frame. 3,771,247, Cl. 40-152.000.

De Luca, Paul V., to Porta Systems Corporation. Manually actuable solenoid operated switch apparatus. 3,772,621, Cl. 335-186.000.

De Nocola, Frank; and Vallender, Edward, to Berrybart, Inc. Method and apparatus for automatically stapling tape. 3,771,708, Cl. 227-111.000.

De Palmo, Charles D.: *See—*
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De Roissart, Henry, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Apparatus for the preservation of animal or human organs in living condition. 3,772,153, Cl. 195-127.000.

De Santis, Bentio. Paint gun cleaner. 3,771,539, Cl. 134-111.000.

De Vries, Hans, to Zellweger AG. Method and apparatus for forming certain pulse sequences. 3,772,659, Cl. 340-173.0sp.

De Vries, Robert C.; and Fleischer, James F., to General Electric Company. Continuous growth of cubic boron nitride. 3,772,428, Cl. 423-290.000.

De Wolf, Nicholas; and Turner, John G., to Feradyne, Inc. Method and apparatus for testing a digital logic FET by monitoring currents the device develops an response to input signals. 3,772,595, Cl. 324-73.00r.

D.E.A. Digital Electronic Automation S.p.A.: *See—*
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DeBarbadillo, John Joseph, II, to International Nickel Company, Inc., The. Corrosion resistant ultra high strength stainless steel. 3,772,005, Cl. 75-126.00c.

Decker, Hanns; Hurtmanns, Heinz; and Schutte, Klaus, to Klockner-Humboldt-Deutz Aktiengesellschaft. Gyratory crusher with labyrinth seal between eccentric drive and crushing cone. 3,771,735, Cl. 241-216.000.

Declerck, James J.: *See—*
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Hadley, Howard C.; and Lindstrom, Harold Richard, 3,771,733.
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Delaney, Edward A.: *See—*
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Dellecave, Thomas L.; and Konegen, Rudolf R., to United States of America, Air Force. Low power, high speed, pulse width dicriminator. 3,772,534, Cl. 307-234.000.

Delmar Chemicals, Limited: *See—*
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Deltrol Corporation: *See—*
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Deluca, Hector Floyd; and Blunt, John Wilson, to Wisconsin Alumni Research Foundation. Processes for preparing 25-hydroxycholecalciferol. 3,772,361, Cl. 260-397.200.

Delves-Broughton, Paul N., to International Standard Electric Corporation. Apparatus for extruding water-blocked cartwheel cable. 3,771,934, Cl. 425-135.000.

Demarest, Henry M., Jr., to PPG Industries, Inc. Method of forming high-melting glass ribbon. 3,771,984, Cl. 65-97.000.

Deminge, Philip H.: *See—*
Campbell, John Scott; Deminge, Philip H.; and Epstein, Aaron M., 3,771,445.

Deml, Miroslav; and Limberg, Jaroslav, to Hutni Projekt Praha, Projekoni a inzenyrska organizace. Apparatus preparing a mixture for bonding granules of vegetable origin. 3,771,771, Cl. 259-8.000.

Denki Onkyo Co., Ltd.: *See—*
Masuda, Noboru; Nishino, Yu; and Kase, Hiroaki, 3,772,100.

Denney, Jerry W., to American Monitor Corporation. Calcium assay and reagents therefor. 3,771,961, Cl. 23-230.00b.

Dennison Manufacturing Company: *See—*
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Derivaz, Charles, to Samvaz S.A. Pipe clamp. 3,771,751, Cl. 248-74.00b.

Deschenes, Pierre A.; and Villeret, Michel, to Universite de Sherbrooke. Converter from pulse code modulation to delta modulation. 3,772,678, Cl. 340-347.0dd.

Deszyck, Edward J.: *See—*
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Deutsche Texaco Aktiengesellschaft: *See—*
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Dexter, Martin, to Ciba-Geigy Corporation. Polyolefins stabilized with organic hydrazine compounds and phenolic antioxidants. 3,772,245, Cl. 260-45.85n.

Dick, A. B., Company: *See—*
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Dickey, John J., to Aluminum Company of America. Container closure. 3,771,683, Cl. 215-39.000.

Dickinson, George Alfred, to Pilkington Brothers, Limited. Manufacture of float glass. 3,771,985, Cl. 65-99.00a.

Diehl, Robert J.; Maher, Robert; and Amolsch, William, to Douthitt Corporation. Printing plate maker. 3,771,869, Cl. 355-85.000.

Dillenberg, Horst. Electrolytic plating of tin-nickel, tin-cobalt or tin-nickel-cobalt on a metal base and acid bath for said plating. 3,772,168, Cl. 204-43.00s.

Dillinger, Lester L. Non-clogging tube cleaning device. 3,771,187, Cl. 15-104.10r.

Ditman, John L., to Penril Data Communications, Inc. Zero-lock print wheel apparatus. 3,771,442, Cl. 101-99.000.

Dobo, Emerick J., to Monsanto Company. Orifice assembly for extruding and attenuating essentially inviscid jets. 3,771,982, Cl. 65-1.000.

Dodd, Everett A.; and Horan, Laurance J., said Dodd assor. to Horan, Laurance J. Tilt-actuated safety device. 3,772,643, Cl. 340-52.00h.

Doerfer Corporation: *See—*
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Doggett, Roger H.; and Tschirch, Richard P., to Lubrizol Corporation, The, mesne. N-sulfohydrocarbon-substituted acrylamide polymers as formation aids for non-woven stock. 3,772,142, Cl. 162-168.000.

Doherty, William A., to Marine Protein Corporation, mesne. Water circulation system for fresh water fish husbandry. 3,771,492, Cl. 119-3.000.

Doi, Tatuo: *See—*
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Donecker, Frederick W.; and Lucht, Wilbert A., to United States Steel Corporation. Torque balanced cable. 3,772,454, Cl. 174-113.00r.

Dongas, Albert George, Sr. Cleaning agent for textiles. 3,772,205, Cl. 252-171.000.

Doocey, Robert J., to Standard Tool & Manufacturing Co. Clamping device for an accurately located workpiece. 3,771,780, Cl. 269-153.000.

Dorey, Howard Anthony, to Solartron Electronic Group, Limited, The. Analogue to digital converters. 3,772,683, Cl. 340-347.0nt.

Dornier A.G.: *See—*
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Dougherty, Earle T. Fence structure with barbed wire extension. 3,771,767, Cl. 256-11.000.

Douno, Syugo: *See—*
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McMath, Jack A.; and Wilson, Fred A., 3,771,566.
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Dragan, William B. Dental floss and method of making same. 3,771,536, Cl. 132-89.000.
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Du Chambon, Michel G., to Cigeco Compagnie des Convoyeurs S.A. Mobile incinerator with a rotary furnace, particularly for household refuse. 3,771,471, Cl. 110-14.000.
Du Kane Corporation: *See—*
Supitilov, Michael C., 3,772,538.
Du Luca, Paul V.; and Drews, Gustav, to Porta Systems Corporation. Wire spool holding and dispensing apparatus. 3,771,743, Cl. 242-129.800.
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Duerst, Henry. Portable carcass skid. 3,771,808, Cl. 280-19.000.
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Dyner, Harry B.; and Hill, Jacques A. F., to Sanders Associates, Inc. Mechanically modulated combustion heated infrared radiation source. 3,771,731, Cl. 240-41.00r.
Dzhagatspantan, Rafael Vachaganovich; Yakimenko, Leonid Markovich; Lyaskin, Jury Grigorievich; Filippov, Mikhail Tikhonovich; and Zetkin, Viktor Ivanovich. Method of removing hydrogen from chlorine gas. 3,772,172, Cl. 204-157.10h.
E-Systems, Incorporated: *See—*
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Eagle-Picher Industries, Incorporated: *See—*
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Ebner, Emanuel C., to Foto-Cube Inc. Picture display and storage device. 3,771,244, Cl. 40-152.000.
Ebner, Emanuel C., to Foto-Cube, Inc. Picture display device. 3,771,246, Cl. 40-152.100.
Eburn, William H., Jr. Process of preparing a printing plate for accurate registration. 3,771,440, Cl. 101-1.000.
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Economy, James; Cottis, Steve G.; and Nowak, Bernard E., to Carborundum Company, The. Branched aromatic polyesters containing cyanuryl nucleus radicals. 3,772,250, Cl. 260-47.0cp.
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Edmund, Everett W. Adjustable size wet suit. 3,771,169, Cl. 2-2.10r.
Edstrand, Torsten Karl Ivar Bernhard; Munksgaard, Asger; Ronlan, Alvin; and Wickberg, Borje Vilhelm, to Erco Lakemedel AB. X-Ray contrast agents. 3,772,376, Cl. 260-518.00a.
Edwards, Carson Penrod, to Sierra Research Corporation. Data message repeater system. 3,772,596, Cl. 325-13.000.
Edwards, Richard N. Sewage treatment apparatus and method. 3,772,188, Cl. 210-15.000.
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Flanagan, Thomas L., to Emhart Corporation. Apparatus for packaging articles. 3,771,282, Cl. 53-194.000.

Flanigan, Eugene E.; and Merriman, Roger W., to General Motors Corporation. Puffer power plant. 3,771,916, Cl. 417-319.000.

Flanigen, Cameron D. Rearrangeable, characteristic blocks. 3,771,795, Cl. 273-157.00r.

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Forgeron, Edward J., to Analysts, Inc. Contaminant collection means for recirculating fluid system. 3,771,624, Cl. 184-6.240.

Forster, Hans-Joachim M.; Katz, Klaus; Bulow, Manfred; Scheuter, Anton; Bordovsky, Jaromir; and Wuchter, Gerhard, to Daimler-Benz Aktiengesellschaft. Servo steering mechanism for vehicles. 3,771,383, Cl. 74-499.000.

Forster, Peter E.; and Nowak, Ronald R., to Motch & Merryweather Machinery Co., The. Weight standardization machine. 3,771,613, Cl. 177-60.000.

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Fowler, John T., to Laitram Corporation, The, mesne. Course difference logic for use with digital magnetic compass. 3,772,503, Cl. 235-150.500.

Fowler, Knobbe & Martens: *See—*
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Francen, Vernon L., to Minnesota Mining and Manufacturing Company. Fire extinguishing composition comprising a fluoroaliphatic surfactant fluorine-free surfactant. 3,772,195, Cl. 252-8.050.

Franer, Victor R., to Minnesota Mining and Manufacturing Company. Embossable magnetic composite film. 3,772,081, Cl. 117-239.000.

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Fraser, Douglas S., to Cenco Medical Health Supply Corporation. Bottom connector and filter holder for chromotographic column. 3,771,659, Cl. 210-198.00c.

Fredricks, Richard A.; Nelson, Charles H.; and Zepka, David J., to ICI America, Inc. Stabilizers and polyolefin compositions containing same. 3,772,354, Cl. 260-429.00j.

Frehn, Fritz, to Deutsche Edelstahlwerke Aktiengesellschaft. Sinter metal alloy. 3,771,975, Cl. 24-182.700.

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French, Park; and Piwonka, Thomas Squire, to TRW Inc. Electrostatic enhancement of evaporation. 3,771,233, Cl. 34-1.000.

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Frey, Dean Rudisill; Henn, Robert Walter; Smith, Donald Tolman; and Vedejs, Arthur Guntis, to Bell Laboratories Incorporated. Universal miniature connector for plural conductors. 3,772,635, Cl. 339-99.00r.

Frey, Gerald J. Endless flexible slide holder and method of making same. 3,771,865, Cl. 353-109.000.

Friberg, Jean-Marie Eugene; and Merigoux, Jean-Marie, to Societe Alsacienne de Constructions Atomique de Telecommunications et d'Electronique "Alcatel". Supersonic centrifugal compressor. 3,771,925, Cl. 415-181.000.

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Fumia, Arthur, Jr., to Eastman Kodak Company. Photographic sensitizing dyes containing a bridgehead nitrogen. 3,772,034, Cl. 96-136.000.

Furia, Andre, to Societe Anonyme D.B.A. Apparatus for testing the road tire adhesion of a vehicle. 3,772,698, Cl. 343-13.00r.

Furuta, Shigeru, to Kabushiki Kaisha Sankosha. Method of manufacturing a multiple-electrode discharge tube. 3,771,205, Cl. 19-15.160.

Gaab, Frederick; Padgett, John W.; and Van, Sherman T., to Moore & Munger, Inc. Wax compositions incorporating alpha olefins. 3,772,233, Cl. 260-285.00a.

Gaertner, George W., Jr.: *See*—
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Gambini, Arnaldo, to Snam Progetti S.p.A. Apparatus for determining the compression strength of spheroidal material made of uranium, thorium and plutonium mixed oxides and the like. 3,771,357, Cl. 73-94.000.

Gandy, Gerald C.; and Reafler, Gerald G., to Eastman Kodak Company. Stabilization of cellulose ester dopes. 3,772,050, Cl. 106-178.000.

Gange, Robert Allen, to RCA Corporation. Light modulator. 3,772,612, Cl. 332-7.510.

Garner, James W.; and Johnson, Marvin M., to Phillips Petroleum Company. Hydroisomerization process and catalyst therefor. 3,772,400, Cl. 260-683.200.

Garr, Ernest J. Wrapping table attachment for dispensing boxes. 3,771,700, Cl. 225-39.000.

Garrett Corporation, The: *See*—
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Garrett, Henry O. Well bore blocking method. 3,771,601, Cl. 166-297.000.

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Gatto, Charles; and Steinbach, Harry M., to Gatto, Charles. Cutting apparatus and method therefor. 3,771,393, Cl. 82-53.100.

Gatzi, Karl, to Geigy-Chemical Corporation. Heterocyclic amines as antifungal active substances. 3,772,437, Cl. 424-244.000.

Gaulier, Jean-Claude, to Compteurs Schlumberger. Gate and braking apparatus therefor. 3,771,262, Cl. 49-43.000.

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Gazda, Irving W.: *See*—
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Gazda, Irving William, to Great Lakes Carbon Corporation. Nipple-electrode assembly and method of making same. 3,771,888, Cl. 403-343.000.

G.D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Seragnoli: *See*—
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Gebendinger, Giovanni Mario, to Macchine Agricole S.p.A. Eccentric-mass vibrator for machines adapted to the mechanical harvesting of olives and fruits in general. 3,771,768, Cl. 259-1.00r.

Gebr. Bohler & Co. A.G.: *See*—
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Gentile, Anthony R.; and Hauck, Clarence Jonathan, III. Method and apparatus for forming a nonwoven fibrous web. 3,772,107, Cl. 156-62.800.

George, Percy F., to Dow Chemical Company, The. Galvanically-destructing metal structures. 3,772,139, Cl. 161-225.000.

George, Philip D.; and Boudreau, Robert J., to General Electric Company. Impregnated capacitor. 3,772,578, Cl. 317-258.000.

Georghallis, Constantine Andreas, to English Numbering, Limited. Document monitor by light transmittance for enabling printer. 3,771,443, Cl. 101-93.00r.

Gerling, John E., to Gerling Moore Inc., mesne. Metal roller conveyor for microwave ovens. 3,772,491, Cl. 219-10.550.

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Gerzon, Koert; and Murphy, Hubert W., to Lilly, Eli, and Company. Erythromycylamine and erthromycyl B amine. 3,772,270, Cl. 260-210.00e.

Ghwaki, Isao, to Victor Company of Japan Ltd. System for cutting and recording on a record disc. 3,772,467, Cl. 179-100.4st.

Giatti, Filippo, to AMF Incorporated. Device for the continuous handling of rodlike articles particular cigarettes perfectly aligned in rows. 3,771,639, Cl. 198-25.000.

Gifford, Robert T., to Vernay Laboratories, Inc. One way check valve. 3,771,556, Cl. 137-533.110.

Gilbert, Everett, to Allied Chemical Corporation. Derivatives of quinoxaline. 3,772,273, Cl. 260-250.00r.

Giles, Ralph R.; and Straley, James M., to Eastman Kodak Company. Purification of copper contaminated dye compounds using di(hydroxalkyl) sulfides. 3,772,268, Cl. 260-208.000.

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Gilman, Paul B., Jr.; Raleigh, Ronald G.; and Koszelak, Thaddeus D., to Eastman Kodak Company. Direct-positive emulsion containing internally fogged, silver halide grains free of surface fog and a desensitizing compound. 3,772,030, Cl. 96-101.000.

Ginsburg, Milton. Method of making a toilet seat. 3,772,111, Cl. 156-79.000.

Ginzel, Severin; and Niederhuber, Peter, to Bussmann W., KG. Hydraulic press for compacting metal powder. 3,771,930, Cl. 425-78.000.

Giorgi, Lewis A. Process of making tridimensional color photographs. 3,772,106, Cl. 156-58.000.

Giraud, Francois L., to LTV Aerospace Corporation, mesne. Moving track for a transportation installation having independent vehicles. 3,771,461, Cl. 104-123.000.

Gjadagni, Dante G.; Buttery, Ron G.; and Seifert, Richard M., to United States of America, Agriculture. Imparting a potato flavor by adding the hydrochloric acid salt of 2-methoxy-3-ethylpyrazine. 3,772,039, Cl. 426-652.000.

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Glick, Arthur; and McPherson, James B., Jr. Method for improving the in-vivo strength of polyglycolic acid. 3,772,420, Cl. 264-102.000.

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Goettl, Adam D. Acoustical speaker mounting means. 3,771,621, Cl. 181-31.00b.

Gold Kist, Inc.: *See—*
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Goodrich, George W., to Bendix Corporation, The. Phosphor screen assembly. 3,772,562, Cl. 315-10.000.

Goodwin, Raymond W., to United Aircraft Corporation. Atmospheric transmissometer. 3,772,525, Cl. 250-565.000.

Goodyear Aerospace Corporation: *See—*
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Gordy, John. Process for the electrolytic recovery of lead, silver and zinc from their ore. 3,772,003, Cl. 75-101.000.

Goren, Yoram; and Lloyd, Samuel H., III, to Santa Fe International Corporation. Single column semisubmersible drilling vessel. 3,771,481, Cl. 114-.50d.

Gorzegno, Walter P., to Foster Wheeler Corporation. Furnace circuit for variable pressure once-through generator. 3,771,498, Cl. 122-406.00s.

Gostyn, Terence M.; and Schtlke, Waldemar. Apparatus for molding polyurethane articles. 3,771,928, Cl. 425-4.00r.

Gould, Francis E.; and Shepherd, Thomas H., to National Patent Development Corporation. Water soluble entrapping of a fragrance. 3,772,215, Cl. 252-522.000.

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Graham, Alfred R., to United States of America, Army. Apparatus for a gun purging system. 3,771,414, Cl. 89-1.00e.

Grams, Ralph R. Biological fluid sampling apparatus. 3,771,965, Cl. 23-259.000.

Grannis, Norman J.; and Winkler, Ted, to TRW Inc. Digital cell for large scale integration. 3,772,536, Cl. 307-304.000.

Grant, Herbert Charles Furney. Pump means. 3,771,920, Cl. 417-211.000.

Grant, John M., to International Telephone and Telegraph Corporation. Cathode ray tube system. 3,772,551, Cl. 313-2.000.

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Gray, Frederick William, to Colgate-Palmolive Company. Exothermic cosmetic. 3,772,203, Cl. 252-90.000.

Gray, James G.; and Sontag, Kenneth E., to McDonnell Douglas Corporation. Fitting and method for filling or evacuating a container. 3,771,278, Cl. 53-7.000.

Great Lakes Carbon Corporation: *See—*
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Greenlee, Thomas W., to Dow Corning Corporation. Silicone elastomers containing. 3,772,240, Cl. 260-37.0sb.

Greenwald, Richard B., to Polaroid Corporation. Colorless precursor of alkyl viologen as filter agent in photographic film. 3,772,026, Cl. 96-77.000.

Greenwald, Richard B., to Polaroid Corporation. Naphthalides and their preparation. 3,772,338, Cl. 260-343.20r.

Greenwald, Richard B., to Polaroid Corporation. Preparation of naphthalides. 3,772,339, Cl. 260-343.20r.

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Grethe, Grethe; Lee, Hsi Lin; and Uskokovic, Milan Radoje, to Hoffmann-La Roche Inc. 4-Hydroxy-isoquinolines and processes for their preparation. 3,772,304, Cl. 260-287.00r.

Grifo, Richard A.: *See—*
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Griste, Frederic S., to Penn Fishing Tackle Mfg. Co. Fishing reel. 3,771,746, Cl. 242-215.000.

Grogean, Charles J.: *See—*
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Gross, Alexander. Shuttle-motion unit for narrow fabric looms. 3,771,572, Cl. 139-136.000.

Grosser, Harry W.; Fehlman, William L.; and Carlson, Duane. Self-testing emergency automotive warning system. 3,772,641, Cl. 340-33.000.

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Grubb, Willard T., to General Electric Company. Univalent cation-selective electrode. 3,772,175, Cl. 204-195.00m.

Grubb, William T., to General Electric Company. Seal and closure for ion-selective electrode. 3,772,109, Cl. 156-69.000.

Grune, Heinz. Method of galvanically treating metallic sectional bodies. 3,772,162, Cl. 204-15.000.

GSE, Incorporated: *See—*
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Guevara, Alfredo R.; and Borsenberger, Paul M., to Eastman Kodak Company. Print-out elements and methods using photoconductors and polygnes. 3,772,011, Cl. 96-1.00r.

Guichard, Jean, to Centre d'Etudes Techniques des Industries de l'Habillement. Device for aligning and maintaining superposed pieces of flexible sheet material. 3,771,475, Cl. 112-121.150.

Gulbierz, Joseph E.; and Bohan, Charles F., to United States of America, Army. Anti-spall lightweight armor. 3,771,418, Cl. 89-36.00a.

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Guth, Raymond J., 40% to Shaw, Robert T. Apparatus for milling frozen material and dispensing a melting aid. 3,771,188, Cl. 15-105.000.

Guthrie, David E.; and Swain, Arthur D., to Saber Management Systems, Inc. Universal information store, method, and apparatus. 3,772,501, Cl. 235-61.110.

Gutman, Arnold D.; and Baker, Don R., to Stauffer Chemical Company. Method of combating weeds with certain oxime esters. 3,771,995, Cl. 71-121.000.

Gutos Metallschliessenfabrik Bader & Hoch K.G., mesne: *See—*
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Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, to Hoffmann-La Roche Inc. Processes and intermediates for quinine, quindine, isomers and derivatives thereof. 3,772,302, Cl. 260-284.000.

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H & W Company, The: *See—*
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Haake, P. William. Orthopedic suspension. 3,771,519, Cl. 128-94.000.
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Hadley, Howard C.; and Lindstrom, Harold Richard, to Deere & Company. Feed grinding apparatus. 3,771,733, Cl. 241-186.00r.
Hageal, Neal. Suction cleaning nozzle for high pile rugs. 3,771,193, Cl. 15-397.000.
Hahn, Floyd, to American Safety Equipment Corporation. Free-spooling retractor for vehicle of restraint system. 3,771,814, Cl. 280-150.0sb.
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Haldas, Walter J.; and Faust, Jesse A., to Lone Star Cement Corporation. Additive cement compositions and method. 3,772,045, Cl. 106-90.000.
Hall, Hugh E., Jr.; McKay, Alexander S.; and Paap, Hans J., to Texaco Inc. Radioactivity oil-water well logging utilizing neutron source. 3,772,513, Cl. 250-262.000.
Hall, Russell J. Pressure type clothes washing and drying machine. 3,771,335, Cl. 68-21.000.
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Hamanaka, Hiroyoshi, to Toho Kagaku Kogyo Kabushiki Kaisha. Organoboron compound. 3,772,357, Cl. 260-410.700.
Hamb, Frederick L., to Eastman Kodak Company. Process for preparing aromatic diester containing copolyesters and products obtained thereby. 3,772,405, Cl. 260-860.000.
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Hamilton, Norman V.; and Lehoux, Ronald, to Hamlou Limited. Air drier and cleaner. 3,771,292, Cl. 55-345.000.
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Hansen, George R., to United States of America, National Aeronautics and Space Administration. Automatic vehicle location system. 3,772,691, Cl. 343-6.5ss.
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Hara, Morihisa; Suzuki, Yoshiko; Ohta, Hironori; and Uemura, Michihiko, to Asahi Glass Co., Ltd. Glass strengthened by ion exchange and method of preparing the same. 3,772,135, Cl. 161-164.000.
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Hardtmann, Goetz E.; and Kathawala, Faizulla G., to Sandoz-Wander, Inc. 4,6-Diaryl-pyrimidin-2(1H)-ones. 3,772,272, Cl. 260-251.00r.
Hardtmann, Goetz E.; and Kathawala, Faizulla G., to Sandoz-Wander, Inc. 4,5-Diaryl-pyrimidin-2(1H)-ones. 3,772,288, Cl. 260-251.00r.
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Harvey, Donald M., to Eastman Kodak Company. Movable stripping and guiding mechanism. 3,771,426, Cl. 95-13.000.
Haselwood, Donald E.; and Solar, Carl M., to Nielsen, A. C., Company. Data interface unit for insuring the error free transmission of fixed-length data sets which are transmitted repeatedly. 3,772,649, Cl. 340-146.1ba.
Hasenbalg, Ralph D., to Vector General, Inc. Vector generator utilizing an exponential analogue output signal. 3,772,563, Cl. 315-23.000.
Hashimoto, Yoshinobu: *See—*
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Hayes, Ernest Frank, to Monsanto Chemicals, Limited. Flame-retardant polymers. 3,772,232, Cl. 260-28.5av.
Haygens, Christiaan, Laboratorium N.V.: *See—*
Smit, Johny Abram; and Kneefel, Wim Bernard Samuel Maria, 3,772,688.
Hayner, Paul F., to Sanders Associates, Inc. Low friction pressure regulating valve. 3,771,563, Cl. 137-625.280.
Hays, William R.: *See—*
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Hazel, Jan Vanden, to Ponsness-Warren. Shotgun cartridge loading machine. 3,771,411, Cl. 86-27.000.

Hazzard, Robert C.: *See—*
Stephenson, Earle W.; Newberry, James G.; and Hazzard, Robert C., 3,771,734.

Hedge, John A., to Sun Research and Development Co. and Teijin Limited. Separation of 2,6-dimethylnaphthalene from 1,5-dimethylnaphthalene with molecular sieve. 3,772,399, Cl. 260-674.0sa.

Hegarty, Brian Anthony; and Trevail, Lewis Herbert, to RCA Corporation. High heat dissipation solder-reflow flip chip transistor. 3,772,575, Cl. 347-235.00r.

Heiba, El-Ahmadi I.; and Stournas, Stamoulis. Liquid hydrocarbon fuels containing alkali metal salts of diarylcarbamates as antiknock agents. 3,771,979, Cl. 44-71.000.

Heimerl, Calvin H. Log slasher. 3,771,395, Cl. 83-79.500.

Heinle, Carl William. Method and apparatus for necking-in tubular members. 3,771,476, Cl. 113-120.00r.

Heinrich, Theodore M.: *See—*
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Heil, Rudolf, Dr.-Ing.: *See—*
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Hellerbach, Joseph; Walser, Armin; Bretschneider, Hermann; and Rudolph, Werner, to Hoffmann-La Roche Inc. 1-Acylamidoalkylbenzodiazepin-2-ones. 3,772,271, Cl. 260-239.30d.

Hellerbach, Joseph; Szente, Andre; and Walser, Armin, to Hoffmann-La Roche Inc. 3-Amino-3-carbalkoxy-4-hydroxy-2-oxo 4 phenyl-1,2,3,4 tetrahydro quinolines. 3,772,305, Cl. 260-287.00r.

Hellman, Per; and Josefsson, Erik Anders Ake, to Stora Kopparbergs Bergslags Aktiebolag. Means for continuously cooling powder produced by granulating a molten material. 3,771,929, Cl. 425-7.000.

Helm, Laszlo: *See—*
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Helmke, Emil A. Fish hook setting device. 3,771,250, Cl. 43-15.000.

Hemmat, Naim; and Wald, Fritz V., to Tyco Laboratories, Inc. Method of producing cadmium telluride crystals. 3,771,970, Cl. 23-304.000.

Henderson, Ian; and Acaster, Geoffrey, to Beatson Clark & Company Limited. Bottle-gauging means. 3,771,650, Cl. 209-80.000.

Hendriks, Johan: *See—*
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Henn, Robert Walter: *See—*
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Hennen, Roy Erving; and Halsall, Vincent Michael, to Globe-Union Inc. Closure assembly for storage battery. 3,772,088, Cl. 136-170.000.

Hennessey, William M.; and Schorno, Hector R., to Burroughs Corporation. Mounting bracket for display panel. 3,772,634, Cl. 339-65.000.

Hennessey, William M.; and Schorno, Hector R., to Burroughs Corporation. Mounting bracket for display panel. 3,772,834, Cl. 339-65.000.

Henninger, Harold B.: *See—*
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Heraeus-Schott Quarzschmelze GmbH: *See—*
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Herbst, Walter A., to Esso Research and Engineering Company. Power system. 3,771,311, Cl. 60-7.000.

Hercules, Incorporated: *See—*
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Foley, Kendall F., 3,772,342.
Keim, Gerald I., 3,772,076.
Ziobrowski, Bernard G., 3,772,047.

Herman, Harry H., Sr. Bathtub cushion lift. 3,771,176, Cl. 4-185.001.

Hermes, Julius, to Martin Processing Company, Incorporated. Pretreatment and dyeing of shaped articles derived from wholly aromatic polyamides. 3,771,949, Cl. 8-4.000.

Hernestam, Sven E. H.; and Squires, Richard F., to A/S Ferrosan. Antidepressive morpholino compounds and methods of producing the same. 3,772,275, Cl. 260-247.50r.

Herpich, William A.; Park, Glenn S.; and Palmer, George W., to Peabody Galion Corporation. Refuse collecting vehicle. 3,771,675, Cl. 214-83.300.

Hershman, Arnold: *See—*
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Hertrich, Friedrich R., to Iomec, Incorporated. System for loading and positioning a transducer in a data storage disc cartridge. 3,772,665, Cl. 340-174.10c.

Hess, Howard V.: *See—*
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Hess, Patrick Henry, to Chevron Research Company. Antiwetting method and compositions. 3,772,346, Cl. 260-448.80r.

Hester, Jackson B., Jr., to Upjohn Company, The. Certain 2-(3-substituted-4H-1,2,4-triazol-4-yl)-2-phenylbenzylamines. 3,772,317, Cl. 260-308.00r.

Hetzel, George F.: *See—*
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Heuer, Walter Cyrus, Sr. Combination fish skinning scaling and knife tool. 3,771,197, Cl. 17-68.000.

Heuze, Maurice Paul. Universal wood working machine. 3,771,579, Cl. 144-1.00c.

Hewlett-Packard Company: *See—*
Balint, Francis A.; Kruger, William P.; Russell, Milton E.; and Trueb, Lucien F., 3,772,553.
Hammond, Donald L.; Knight, Larry V.; Yoshida, Henry; and Peickii, Vasalie L., 3,772,522.

Heyes, James; and Ward, Neal, to Beecham Group Limited. 5-Amino-4-carboxamido-2-arylimidazoles. 3,772,319, Cl. 260-309.000.

Hiestand, Karl, to SMW-Spanneinrichtungen Schneider & Weisshaupt. Device for feeding pressure fluid from a stationary pressure source into a rotating member. 3,771,803, Cl. 279-4.000.

Higgins, Jerry G.: *See—*
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Hilberg, Wolfgang, to Licentia Patent-Verwaltungs-G.m.b.H. Data storage system with means for eliminating defective storage locations. 3,772,652, Cl. 340-172.500.

Hilbert, Francis H., to Motorola, Inc. Gain modified multi-channel audio system. 3,772,479, Cl. 179-1.0gq.

Hill, George B. Adjustable plate saddle with ground edges. 3,771,449, Cl. 101-415.100.

Hill, Jacques A. F.: *See—*
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Hill, William L., to Sun Oil Company (Delaware). Method of explosively fracturing from drain holes using reflective fractures. 3,771,600, Cl. 166-299.000.

Hills, Brian Leslie, to Australian Road Research Board. Visual display method and apparatus. 3,772,507, Cl. 240-2.00r.

Hindersinn, Raymond R.: *See—*
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Hinterholzer, Hans; Saiko, Alphons; Spieldiener, Reinhold; and Spieldiener, Robert, to Intamin AG. Safety binding for skis. 3,771,806, Cl. 280-11.35d.

Hirai, Koichi: *See—*
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Hiramatu, Sadakazu; Egusa, Tomoyosi; and Tateisi, Hiromiti, to Toyo Bearing Manufacturing Company Limited. Apparatus for controlling chucking pressures in workpieces in machine tools. 3,771,802, Cl. 279-4.000.

Hirota, Kashichi, to Kyowa Denki Kagaku Kabushiki Kaisha. Lighting device. 3,772,509, Cl. 240-2.100.

Hirsh Company, The: *See—*
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Hisatsune, Tomio: *See—*
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Hitachi, Ltd.: *See—*
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Hitchings, Joseph J., III; Hohenberger, Carl H.; and Holmes, Allen E., to Hydrasearch Co., Inc. Axially and rotatably movable flange connector. 3,771,819, Cl. 285-312.000.

Hitomi, Teiichi; Nishikawa, Satoru; and Sakamoto, Hitoshi, to Dai Nippon Toryo Kabushiki Kaisha. Radiothermoluminescence dosimeters and materials therefor. 3,772,206, Cl. 252-301.40r.

Hoch, Fritz, to Gutos Metallschliessenfabrik Bader & Hoch K.G., mesne. Push-in fastener. 3,771,200, Cl. 24-230.00a.

Hodge, Stephen Raymond; and Argent, David Thompson. Apparatus for obtaining a substantially continuously scaled analogue representing the average value of a sequence of binary words. 3,772,502, Cl. 235-150.500.

Hoerner Waldorf: *See—*
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Hofer, Franz: *See—*
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Hofer, Hermann P.; and Schmid, Alois. Method for carrying out endothermic processes in a shaft furnace. 3,771,946, Cl. 432-14.000.

Hofer, Wolfgang; Schliebs, Reinhard; Schmidt, Robert Rudolf; and Eue, Ludwig, to Bayer Aktiengesellschaft. 2-Chloroethanethiophosphonic acid dichloride as plant growth influencing agent. 3,771,992, Cl. 71-76.000.

Hoffman, Dale M., to Harris-Intertype Corporation, mesne. False null detection in automatic tracking systems. 3,772,695, Cl. 343-7.00a.

Hoffman, Larry Allan Rodney: *See—*
Mitchell, James; Bassett, Douglas Austin; Glass, David George; Hoffman, Larry Allan Rodney; Postle, William Arnold; and Johnson, Dennis William, 3,771,356.

Hoffmann-La Roche Inc.: *See—*
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Hellerbach, Joseph; Walser, Armin; Bretschneider, Hermann; and Rudolph, Werner, 3,772,271.
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Newmark, Harold Leon, 3,772,438.

Uskokovic, Milan Radoje; and Williams, Thomas Henry, 3,772,366.

Hofmann, Peter; and Nachbur, Herman, to Ciba-Geigy AG. Process for flameproofing fibre materials of polyesters and cellulose. 3,772,068, Cl. 117-136.000.

Hogg, Walter R.; and Coulter, Wallace H., to Coulter Electronics, Inc. Non-rectifying clamps. 3,772,604, Cl. 328-169.000.

Hohenberger, Carl H.: *See—*
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Hohn, Jurgen: *See—*
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Holden, Harold; and Weichert, Arnold, to H & W Company, The. Novel developer and process. 3,772,019, Cl. 96-66.0hd.

Holland, Andrew M.: *See—*
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Hollier, John C. L.: *See—*
Stranahan, John J.; and Hollier, John C. L., 3,771,940.

Holm, William J., to Riggs & Lombard, Inc. Web scouring method and apparatus. 3,771,952, Cl. 8-149.100.

Holm, Wilton R.: *See—*
Vlahos, Petro Tarzana; and Holm, Wilton R., 3,772,465.

Holmes, Allen E.: *See—*
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Holmes, Roy F.: *See—*
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Holowka, Jaroslaw A.; and Lerner, Martin L., to Zenith Radio Corporation. Etch-back screening. 3,772,103, Cl. 156-18.000.

Holty, David W.; and Kekish, George T., to Nalco Chemical Company. Paper coated with a composition comprising pigments and styrene-acrolein polymers. 3,772,073, Cl. 117-155.0ua.

Holubar Mountaineering Ltd.: *See—*
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Holzer, W., & Co. K.G.: *See—*
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Holzer, Walter; and Mehlan, Bernd, to Holzer, W., & Co. K.G. Device for temporary cutoff of electric loads in program switch mechanisms. 3,772,488, Cl. 200-38.00r.

Holzhauser, Emil; and Rea, Robert D., to Honeywell Inc. Miniature electric trend recorder high torque speed reducer. 3,771,381, Cl. 74-421.00r.

Homecrest Company: *See—*
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Homeyer, Bernhard: *See—*
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Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Honda, Keisuke. Ultrasonic cleaning device. 3,771,772, Cl. 259-72.000.

Honeywell Inc.: *See—*
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Hood, John W.: *See—*
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Hook, Richard Wayne, to Deere & Company. Root crop cleaning rolls. 3,771,651, Cl. 209-107.000.

Hook, William George Stephen, to Imperial Chemical Industries, Limited. Mixing device suitable for incorporation in screw extruders. 3,771,774, Cl. 259-193.000.

Hooker Chemical Corporation: *See—*
Liu, Chong Tan, 3,771,977.
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Hoover Company, The: *See—*
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Hoover, John R. E., to Smith Kline Corporation. 7-Ureidocephalosporins. 3,772,286, Cl. 260-243.00c.

Horagucui, Akira, to General Corporation, The. Colour killer system for colour television receiver. 3,772,461, Cl. 178-5.4ck.

Horan, Laurance J.: *See—*
Dodd, Everett A.; and Horan, Laurance J., 3,772,643.

Hord, Robert E., Jr. Kingpin assembly. 3,771,816, Cl. 280-433.000.

Horlein, Gerhard; Mildenberger, Hilmar; Kroniger, Arno; and Hartel, Kurt, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 1-Carbamoyl-2-carboalkyoxyamino benzimidazoles. 3,772,322, Cl. 260-309.200.

Horn, Vladimir; Kuda, Vladimir; and Cerny, Jindrich, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Fabric expanding device for weaving machines. 3,771,573, Cl. 139-294.000.

Horner, Ellwood J.; and Gaisner, Eugene J., to Azoplate Corporation. Apparatus for processing two sides of a printing plate. 3,771,428, Cl. 95-89.00r.

Hornung, Walter, to Daimler-Benz Aktiengesellschaft. Axle suspension in a bus. 3,771,617, Cl. 180-24.020.

Horsley, Lee H., to Dow Chemical Company, The. Purification of 2-chloroalkanoic acids by azeotropic distillation. 3,772,157, Cl. 203-52.000.

Hort, Eugene V., to GAF Corporation. Use of 1,3-bis(2-pyrrolidonyl)butane as a selective solvent for the recovery of aromatic hydrocarbons. 3,772,186, Cl. 208-326.000.

Horton, Billy M.: *See—*
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Horton, John P.; Kagan, Avihu; and Sulser, Troy S., to Danline Manufacturing Company. Brush bristle reinforcement. 3,771,189, Cl. 15-179.000.

Horvath, Tibor. Aquarium syphon. 3,771,544, Cl. 137-151.000.

Hoshino, Shoichiro; Yumiki, Keiichi; and Taira, Toshio, to Keuffel & Esser Company. Light-sensitive imaging materials. 3,772,029, Cl. 96-48.00r.

Hoss, Warren A., Sr.; and Kilpatrick, Robert H., to Lockheed Aircraft Corporation. Adhesive bonded split sleeve coupling for pipes and tubular members. 3,771,820, Cl. 285-373.000.

Hossbach, Erich, to Faser- und Kunststoff Presswerk Romen K.G. Loud speaker system. 3,772,466, Cl. 179-116.000.

Hostettler, Fritz; Huffman, George W.; and Rustad, Norman E., to Quaker Oats Company, The. Preparation of polyurethane foams and microcellular elastomers with integral skins using a combination of tetraalkylguanidine and an organomercury compound. 3,772,22, Cl. 260-2.50a.

Houch, Harold L.: *See—*
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Houdaille Industries, Inc.: *See—*
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Houlihan, William J., to Sandoz-Wander Inc. 7-Oxo-benzocycloheptene acestic acids. 3,772,378, Cl. 260-515.00p.

Hovis, James E.; and Finke, Harry P., to Bloom Engineering Company, Inc. Adjustable flame burner. 3,771,944, Cl. 431-284.000.

Hoya Glass Works, Ltd.: *See—*
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Hsieh, Henry L.: *See—*
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Hubbard, Harold C., to Motor Wheel Corporation. Anti-skid vehicle braking system. 3,771,840, Cl. 303-21.0eb.

Hubbard, Howard N.: *See—*
Mayernik, Andrew B.; Beckwith, Edwin F.; and Hubbard, Howard N., 3,771,762.

Hubbard, James Nathan, to Texaco Inc. Antifouling compositions and processes for using them. 3,772,182, Cl. 208-48.0aa.

Hubele, Adolf, to Ciba-Geigy AG. Carbamates containing an oxime ether function. 3,772,385, Cl. 260-472.000.

Hubele, Adolf; and Rohr, Otto, to Ciba-Geigy AG. N-(3-trifluoromethyl-4-chlorophenyl)-carbamates. 3,772,386, Cl. 260-471.00c.

Huber, John R.: *See—*
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Huckstedt, Guido; and Jakobs, Hermann, to Max-Planck-Gesellschaft, zur Forderung der Wissenchaften e.V. Method and apparatus for purifying sea water. 3,772,192, Cl. 210-44.000.

Hudson, Herbert E., Jr. Filtration system. 3,771,655, Cl. 210-108.000.

Huet, Paul. Pilot-operated shut-off valve. 3,771,553, Cl. 137-488.000.

Huff, Kenneth O. Sample sacking funnel. 3,771,578, Cl. 141-314.000.

Huffman, George W.: *See—*
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Hughes Aircraft Company: *See—*
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Hughes, David C., to Intelligence Services Products Division, Inc. Electrical combination lock. 3,772,574, Cl. 317-134.000.

Hughes, Richard Henry, to RCA Corporation. In-line electron gun. 3,772,554, Cl. 313-69.00c.

Hugie, John. Hydraulic transmission. 3,771,631, Cl. 192-58.00r.

Hulbert, Orville I. Animated toy. 3,771,256, Cl. 46-239.000.

Hungerford, Daniel Comstock, to Brunswick Corporation. Twin fluke anchor having improved shank-crown contact. 3,771,486, Cl. 114-208.00r.

Hunt, Rodney, Company, mesne: *See—*
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Hunter, Australia. Canine johnny. 3,771,491, Cl. 119-1.000.

Hunter, Byron A., to Uniroyal, Inc. Di(higher secondard alkyl)hydroquinones. 3,772,393, Cl. 260-625.000.

Hunter, Joe S.; Bailey, Escar L.; and Little, Little J., to United States of America, Army. Flueric transverse-impact modulator accelerometer. 3,771,369, Cl. 73-515.000.

Hunter, William A., to Crysler Corporation. Overfill limiting apparatus and liquid vapor separator. 3,771,690, Cl. 220-85.0vr.

Hurley, Michael; and Declerck, James J. Putt-cue device with two different sized striking heads. 3,771,788, Cl. 273-68.000.

Hurtmanns, Heinz: *See—*
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Hutson, Thomas, Jr.; and Carter, Cecil O., to Phillips Petroleum Company. Apparatus for dimerization of C_3 to C_{10} olefins with deposited catalyst. 3,771,966, Cl. 23-260.000.
Hutto, Walter D., Jr.: *See—*
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Huyffer, Paul S., to Polaroid Corporation. 7-Sulfamoyl indole derivatives. 3,772,329, Cl. 260-326.12r.
Hyakumura, Hiroyuki, to Isuru Motors Ltd. Device for lubricating a tandem axle assembly with an interaxle differential. 3,771,622, Cl. 184-11.00a.
Hyde, Richard W.; Meissner, Herman P.; and Kusik, Charles L., to Columbia Gas System Service Corporation, mesne. Method for converting solid ferrous metal to steel. 3,772,000, Cl. 75-60.000.
Hyde, Robert W. Steam driven vehicle and steam engine therefor. 3,771,419, Cl. 91-6.500.
Hydrasearch Co., Inc.: *See—*
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Im, Ho Bin, to Ampex Corporation. Magnetic tape press. 3,771,396, Cl. 83-98.000.
Imai, Tsutomu; and Nakamura, Zenkichi, to Sony Corporation. Erasing head for use with multi-track magnetic tape. 3,772,471, Cl. 179-100.20d.
Imoto, Katsuyuki, to Hitachi, Ltd. Electric power divider having function of impedance transformation. 3,772,616, Cl. 333-19.000.
Imperial Chemical Industries Limited: *See—*
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Isenberg, Henry D.; Reichler, Allen S.; and Wiseman, Donald F., to Technicon Instruments Corporation. Method and apparatus for automated antibiotic susceptibility analysis of bacteria samples. 3,772,154, Cl. 195-103.50r.
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Ishikawajima Harima Jyokogyo Kabushiki Kaisha, a/k/a (Ishikawajima Harima Heavy Industries Co., Ltd.): *See—*
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Itakura, Kiyoshi; and Ohmae, Yutaka, to Nippon Sheet Glass Co., Ltd. Surface-coated metal material having resistance to molten tin. 3,771,974, Cl. 29-195.00m.
Iten, Oscar, to R.C.F. S.p.A. Electrical discharge machining apparatus. 3,772,493, Cl. 219-69.00g.
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Izhelya, Georgy Ignatievich; Shapovalenko, Alexandr Grigorievich; Shevchenko, Vasily Ivanovich; and Popkov, Vladimir Sergeevich. Linear induction electric motor. 3,772,539, Cl. 310-12.000.
Izumitani, Tetsuro: *See—*
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Jackson, Albert M., to Martin Marietta Corporation. Tamper resistant container. 3,772,674, Cl. 340-273.000.
Jackson, Erval D. Swather device. 3,771,297, Cl. 56-15.200.
Jackson, Michael L.: *See—*
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Jackson, Ross J., to United States of America, Atomic Energy Commission. Uranium, niobium and carbon alloy. 3,772,004, Cl. 75-122.700.
Jackson, Sydney; and Titterington, Joseph Bell, to Ferranti Limited. Manufacture of supports for use with semiconductor devices. 3,771,212, Cl. 29-471.300.
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Johnson, Carl A. Combination steady-rest and tool holder. 3,771,392, Cl. 82-35.000.
Johnson, Charles L., to United States of America, National Aeronautics and Space Administration. Molding process for imidazopyrrolone polymers. 3,772,418, Cl. 264-284.000.
Johnson, Clarence S.; and Baldridge, Henry D. Electric anti-shark dart. 3,771,249, Cl. 43-6.000.
Johnson, Dean W., to Burcliff Industries, Inc. Integrated electrical control device. 3,772,622, Cl. 335-202.000.
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Johnson, Kenneth W.: *See—*
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Johnson, Marvin M.: *See—*
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Johnson, Verner A., to Johnson Die & Engineering Co. Method and tooling for extruding a closed end rivet. 3,771,216, Cl. 29-509.000.
Johnson, Verner A., to Johnson Die & Engineering Co. Method and apparatus for extruding a rivet form in a kqyer of metallic material. 3,771,480, Cl. 113-1.00r.
Johnson, William G.: *See—*
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Johnson, William R.; and Singleton, Thomas C., to Monsanto Company. Purification of acetic acid streams by distillation. 3,772,156, Cl. 203-33.000.
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Jones, Ida May, to Imperial Chemical Industries, Limited. Emulsions. 3,771,955, Cl. 8-173.000.
Jones, Michael Weston, to Imperial Metal Industries (Kynoch), Limited. Structures. 3,771,748, Cl. 244-123.000.
Jones, Robert J.; and Burns, Eugene A., to TRW Inc. Endo alicyclic end capped polyimide resins. 3,772,254, Cl. 260-78.0tf.
Jones, William C.: *See—*
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Jones, William C.; and Jones, Harry R., said Jones, Harry R., assor. to said Jones, William C. System for measuring timed forced expiratory volume. 3,771,512, Cl. 128-2.080.
Jonsson, Karl-Erik; and Erisk, Olof Edvin, to Mo Och Domsjo Aktiebolag. Method and an apparatus for conveying elongated objects one-by-one. 3,771,641, Cl. 198-34.000.
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Joy, John Richard, to Union Carbide Corporation. Alkyl peroxides. 3,772,349, Cl. 260-448.20b.
Joy, John Richard, to Union Carbide Corporation. Silyl acyl peroxides and acyl peroxy polysiloxanes. 3,772,353, Cl. 260-448.20n.
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Jules, Roger; and Bassereau, Justin. Method for preparing and checking a photographic cut which is to be transferred to a sensitized printing cylinder, and means for applying this process. 3,771,868, Cl. 355-77.000.

Jumer, John F. Electrochemical processing of inner surfaces of large vessels. 3,772,163, Cl. 204-26.000.

Junginger, Klaus M., to Original Hanau Quarzlampen GmbH. Operating lamp provided with a light pipe. 3,772,506, Cl. 240-1.400.

Jurjans, Ojars, to Jetronic Industries, Inc. Programmable control of the injection of additives in a laundering operation. 3,771,333, Cl. 68-12.00r.

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Kack, James W.; and Mowbray, Terry E., to Holubar Mountaineering Ltd. Method of manufacture of down insulated goods. 3,771,203, Cl. 28-77.000.

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Kahn, Myron; and Werderman, William R., to Polorized Corporation of America. Machine for continuously producing large area light polarizing panels. 3,772,128, Cl. 156-555.000.

Kaiho, Yoshiharu. Generation of motive power with metal and water as fuel. 3,771,313, Cl. 60-216.000.

Kalle Aktiengesellschaft: *See—*
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Kamholtz, Richard: *See—*
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Kaminski, Arthur P. Infusion pump. 3,771,694, Cl. 222-70.000.

Kaminsky, Daniel; and Wise, Mary, to Warner-Lambert Company. Pyridylthio ketones. 3,772,307, Cl. 260-294.800.

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Kamman, Gordon W., to Houdaille Industries, Inc. Automatic pressure relief and snubbing in hydraulic actuators. 3,771,422, Cl. 91-405.000.

Kammerl, Gerhard. Table football apparatus. 3,771,789, Cl. 273-85.00h.

Kan, Peter T.; Cenker, Moses; and Narayan, T. V. Lakshmi, to BASF Wyandotte Corporation. Carbodiimide foams prepared from amine-derived isocyanate-terminated quasi-prepolymers. 3,772,217, Cl. 260-2.5bf.

Kanai, Yoshio: *See—*
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Kang, Chia-Chen; and Schreiber, Robert A., to Pullman Incorporated. Treatment of halogen-containing gas mixture. 3,772,425, Cl. 423-239.000.

Kantorski, Joseph W.; La Barre, David A.; and Smith, Donald A., to American Optical Corporation. Pockels cell. 3,771,852, Cl. 350-150.000.

Kapalko, Erwin J.; and English, William H., to PPG Industries, Inc. Electrodepositable polyester compositions containing a methylol phenol ether. 3,772,227, Cl. 260-18.00r.

Kapilow, Marvin. Disposable mechanical pencil assembly. 3,771,882, Cl. 401-80.000.

Kaplan, Ralph Benjamin, to Du Pont de Nemours, E. I., and Company. Process for preparing 2-(O-hydroxyphenyl) quinazolines. 3,772,274, Cl. 260-251.00q.

Kapp, Stewart: *See—*
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Kato, Hajime: *See—*
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Kawai, Kiyohisa: *See—*
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Keel, Harry L. Clapboard assembly for roofs and sidings. 3,771,271, Cl. 52-478.000.

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Kelly, Paul R. Waste disposal. 3,771,468, Cl. 110-8.00c.

Kelly, William J.; and Titus, Robert J., to Cogar Corporation. Dual control loop switching regulator. 3,772,588, Cl. 323-17.000.

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Kenneryd, Karl Gosta Lennart; and Magnusson, Olov Tage, to Aktiebolaget Electrolux. Refrigerator operated by a fluid fuel burner for a movable structure. 3,771,320, Cl. 62-239.000.

Keogh, Thomas H. Electrical distribution transformer having pressure relief means. 3,772,624, Cl. 336-55.00r.

Kern, Robert. Suspended recreational device with rotatable rod structure. 3,771,784, Cl. 272-63.000.

Kerns, Frank F., Jr., to Clare-Pendar Co. Space bar assembly. 3,771,636, Cl. 197-82.000.

Kerr, Arnold. Weight scale for vehicle. 3,771,614, Cl. 177-137.000.

Kerr Glass Manufacturing Corporation: *See—*
Fischer, Robert P.; and Straub, Donald H., 3,771,931.

Kerstetter, Donald R., to GTE Sylvania, Incorporated. Electron discharge device grid having enhanced thermal conductivity and reduced secondary emission characteristics. 3,772,561, Cl. 313-350.000.

Kessinger, Orville E., Jr.: *See—*
Clasper, Thomas; Hutton, Wilfred H.; Kessinger, Orville E., Jr.; Randour, Victor; and Simpson, Fred E., 3,771,843.

Keuffel & Esser Company: *See—*
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Bertolacini, Ralph J.; and Kim, Dae K., 3,772,184.
Kim, Young Ho; Pattison, John N.; and Johnson, Kenneth W., to AMBAC Industries, Incorporated. Gas analyzer. 3,771,960, Cl. 23-232.00e.
Kimura, Shiro; Ishige, Sadao; Kato, Hajime; Hayashi, Takao; Miyamoto, Akio; and Matsukawa, Hiroharu, to Fuji Photo Film Co. Ltd. Recording sheet and color developer therefor. 3,772,052, Cl. 117-362.000.
King, Jerry N.: *See—*
Eschenbach, Paul W.; King, Jerry N.; and Riddle, Dennis L., 3,771,953.
King, Leonard Tony, to Speedine Partnership. Food heating device. 3,771,433, Cl. 99-331.000.
King, Robert W.; and Grogean, Charles J. Lubricating system for rotary machine. 3,771,903, Cl. 418-84.000.
King-Seeley Thermos Company: *See—*
Bell, Vernon D., 3,771,822.
Kinney, Thomas D.; and Pickett, John E. P. Automatic tissue processor. 3,771,490, Cl. 118-7.000.
Kirk, Russell R.: *See—*
Foster, Jack D.; Kirk, Russell R.; and Moreno, Frederick E., 3,772,610.
Kirsch, Hans-Rudolf, to Ciba-Geigy AG. Colour photography. 3,772,015, Cl. 96-30.000.
Kishida, Yukichi: *See—*
Nakajima, Tomio; Sugita, Sadao; Kishida, Yukichi; Yoshimoto, Masasumi; and Ishida, Noboru, 3,772,023.
Kitchen, Ross M.: *See—*
Powell, Eric; and Kitchen, Ross M., 3,772,226.
Kittredge, Peter H. Ear plugs. 3,771,521, Cl. 128-152.000.
Kjaersgaard, Sven Erik, to Telefonaktiebolaget L M Ericsson. Modulator, included in a carrier frequency system wherein the carrier signal periodically interrupts the information signal during the modulation process. 3,772,614, Cl. 332-161.000.
Klaase, Petrus Theodorus Antonius, to Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid. Method for manufacturing needles for fibrillating rollers. 3,772,495, Cl. 219-68.000.
Klasons, Visvaldis; and Bowser, George Carroll, to Catalyst Research Corporation. Explosive primer with actuating means. 3,771,456, Cl. 102-70.00r.
Klauke, Erich; Kuhle, Engelbert; Eue, Ludwig; and Hack, Helmuth, to Bayer Aktiengesellschaft. N-Aryl ureas. 3,772,372, Cl. 260-553.00a.
Klein, Willi: *See—*
Witzig, Emil Karl; Frank, Rudolf; and Klein, Willi, 3,771,896.
Kleven, Lowell A.: *See—*
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Klingler, George A. Particle accumulator with particle extractor and stabilizer. 3,771,291, Cl. 55-261.000.
Klink, Jerome P.; Symbroski, Alex P.; and Shape, Norman R., to Owens-Corning Fiberglas Corporation. Method of and apparatus for processing linear elements. 3,771,324, Cl. 65-11.00w.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Decker, Hanns; Hurtmanns, Heinz; and Schutte, Klaus, 3,771,735.
Kloetzer, Wilhelm: *See—*
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Klotzer, Wilhelm: *See—*
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Knapp, Donald Edward; and Nageroni, Lindo Paul, to American Cyanamid Company. TiO_2 slurries having a high solids content. 3,772,046, Cl. 106-300.000.
Knappstein, Johannes; Fritzsche, Helmut; and Stratmann, Josef, to Still, Carl, Firma. Apparatus for ejecting coke from a coking furnace. 3,772,155, Cl. 202-263.000.
Knapsack Aktiengesellschaft: *See—*
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Knight, Michael Horace; Mitchell, Barbara; and Ratcliffe, Maurice James, to Imperial Chemical Industries, Limited. Resins. 3,772,404, Cl. 260-859.00r.
Knobel, William E. Variable ratio belt drive. 3,771,378, Cl. 74-230.17e.
Knourek, Jaroslav; Kouril, Oldrich; and Mureso, Vladimir, to Vyzkumny a vyvojovy ustav zavodu vseobecneho strojirenstvi. Apparatus for separately controlling knitting means. 3,771,332, Cl. 66-154.00a.
Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Carbonylation of aliphatic organic halides with metallic alcoholates. 3,772,384, Cl. 260-476.00r.
Knox, Walter R.: *See—*
Paulik, Frank E.; Hershman, Arnold; Roth, James F.; and Knox, Walter R., 3,772,380.
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans-Georg, to Eisenwerk-Gesellschaft Maximilianshutte m.b.H. Method and converter for refining pig iron. 3,771,998, Cl. 75-52.000.
Ko, Daniel Y. C.: *See—*
Carr, Norman L.; and Ko, Daniel Y. C., 3,772,398.
Kobayashi, Hisamine. Vibratory finishing apparatus with a helical and tubular container. 3,771,266, Cl. 51-163.000.
Kobayashi, Tadashi. High-speed paper web forming and combining system with a stationary water guide. 3,772,140, Cl. 162-133.000.
Kobayashi, Tamotsu, to Fischer & Porter Company. Process controller with bumpless transfer. 3,772,602, Cl. 328-71.000.
Koch, Klaus: *See—*
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Lindell, John P.; and Hanson, Charles B., 3,771,241.
Kogl, Wolfgang, to DSD Dillinger Stahlbau GmbH. Heat treatment apparatus. 3,771,776, Cl. 266-6.00s.
Kohlhaas, Folker: *See—*
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Kohlpoth, Gerhard; Komischke, Peter; Mixich, Johann; and Kilger, Hans-Joachim, to Knapsack Aktiengesellschaft. Production of styrene/acrylonitrile-copolymers. 3,772,257, Cl. 260-855.00r.
Koivunen, Erkki A., to General Motors Corporation. Anti-creep brake controlled by throttle and vehicle speed. 3,771,630, Cl. 192-3.000.
Kokusai Denwa Kabushiki Kaisha: *See—*
Oshima, Shintaro; Watanabe, Teruji; and Ishihara, Hideo, 3,772,661.
Kolb, Duane V.: *See—*
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Kolbus, August: *See—*
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Kominami, Naoya; and Tamura, Nobuhiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing phenyl esters of aliphatic carboxylic acids. 3,772,383, Cl. 260-479.00r.
Komischke, Peter: *See—*
Kohlpoth, Gerhard; Komischke, Peter; Mixich, Johann; and Kilger, Hans-Joachim, 3,772,257.
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Konegen, Rudolf R.: *See—*
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Kong, Elizabeth L. Game device for manipulating separable playing pieces. 3,771,790, Cl. 273-110.000.
Konig, Wolfgang: *See—*
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Konishiroku Photo Industry Co., Ltd.: *See—*
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Koszelak, Thaddeus D.: *See—*
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Kowalchuk, Serhiy. Process for mending fabrics. 3,772,114, Cl. 156-98.000.
Kraatz, Gerald A.: *See—*
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Kraemer, Sandy F. Opaque narrow necked container exposing ends of game playing pieces. 3,771,793, Cl. 273-139.000.
Kragh, Jorn: *See—*
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Krahnke, Robert H., to Dow Corning Corporation, The. Urea-functional organosilicon compounds. 3,772,351, Cl. 260-448.20n.
Krakstrom, Paul, to Oy Warsila AB. Lock system. 3,771,340, Cl. 70-338.000.
Kramer, Gary R.: *See—*
Pippen, David L.; and Kramer, Gary R., 3,772,176.

Krause, Erich, to Universal Maschinenfabrik Dr. Rudolf Schieber G.m.b.H. Adjusting device for the tightness of the knitting on knitting machines. 3,771,329, Cl. 66-78.000.

Kretschmer, Paul. Fastening arrangement for decorative wheel rings. 3,771,834, Cl. 301-37.00p.

Kreusch, Edward G.; and Husslini, Farouk F., to Culligan Inc. Iodine treated activated carbon and process of treating contaminated water therewith. 3,772,189, Cl. 210-40.000.

Krewson, Neil N.: *See*—
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Kroekel, Charles Henry, to Rohm & Haas Company. Unsaturated polyester resinous compositions. 3,772,241, Cl. 260-40.00r.

Kroniger, Arno: *See*—
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Krueger, Harvey R.: *See*—
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Kruger, Harry, GmbH: *See*—
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Kruger, John G.: *See*—
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Kruger, William P.: *See*—
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Kubota, Yasuharu, to Sony Corporation. Image pickup tube. 3,772,552, Cl. 313-65.00r.

Kuda, Vladimir: *See*—
Horn, Vladimir; Kuda, Vladimir; and Cerny, Jindrich, 3,771,573.

Kuehnast, Irving. Lightning flash-to-bang detector. 3,772,594, Cl. 324-72.000.

Kuehne, Otto R. Combination filter and cigarette holder. 3,771,534, Cl. 131-187.000.

Kugler, Fritz: *See*—
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Kumag A.-G.: *See*—
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Kummer, Helmut, to Telefunken Patentverwertungs-G.m.b.H. Speed gate equipped doppler radar system. 3,772,696, Cl. 343-7.400.

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Kusterer, James E., Jr.; and Sproull, Reavis C., to Research Corporation, mesne. Gaseous diffusion paper deacidification. 3,771,958, Cl. 21-58.000.

Kyowa Denki Kagaku Kabushiki Kaisha: *See*—
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La Barre, David A.: *See*—
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Lacharlotte, Charlotte, Pierre: *See*—
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Lachowicz, Donald R., to Texaco Inc. Process for the polymerization of acrylic acid esters. 3,772,258, Cl. 260-86.10e.

Lack, Bryan Edward Charles; and Cramp, Donald, to General Foods Corporation. Selector mechanism. 3,771,692, Cl. 221-124.000.

Lackey, Ray R.; Henninger, Harold B.; and Schneider, Henry J., to Sybron Corporation. X-ray cassette holder. 3,771,781, Cl. 269-218.000.

Laclede Steel Company: *See*—
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Laevosan Gesellschaft mgH & Co., KG: *See*—
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Lagasse, Eugene F.; and Geissler, Francis X., to Conrac Corporation. Split flap display module. 3,771,242, Cl. 40-35.000.

Lage, James Richard. Method and apparatus for improved transfer of heat. 3,771,589, Cl. 165-1.000.

Laing, Nikolaus. Axial thrust compensation for centrifugal pumps. 3,771,910, Cl. 417-420.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
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Lal, Joginder; and Sandstrom, Paul H., to Goodyear Tire & Rubber Company, The. Tack in ethylene-propylene rubbers by adding a C_5-C_{10} olefin polymer and a tackifier. 3,772,410, Cl. 260-897.00a.

Lamb, Everette, Jr., 60% to Fair, James W. Artificial heart. 3,771,173, Cl. 3-1.000.

Lamb, Reginald T., to Bausch & Lomb Incorporated, mesne. Surface pattern stylus board. 3,771,634, Cl. 197-1.000.

Lamplugh, Roland J.; and Meisel, Frederick W., Jr., to Scott Paper Company. Flexible, open-cell, non-discoloring polyurethane foam. 3,772,218, Cl. 260-2.5bb.

Lanam, Richard D.: *See*—
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Land, Edwin H., to Polaroid Corporation. Manually controlled replay system for automatic transparency processing and projection apparatus. 3,771,861, Cl. 352-130.000.

Land, Edwin H.; and Bennett, Stewart, to Polaroid Corporation. Supervisory control system for automatic transparency processing and projection apparatus. 3,771,862, Cl. 352-130.000.

Land, Edwin H., to Polaroid Corporation. Diffusion transfer receiving sheets. 3,772,025, Cl. 96-76.00r.

Land Pyrometers, Limited: *See*—
Swithenbank, Joshua; and Taylor, David Shaw, 3,772,670.

Landler, Josef: *See*—
Spietschka, Ernst; Landler, Josef; and Wager, Dieter, 3,772,303.

Lane, Robert W., to Airolite Company, The. Louver assembly. 3,771,430, Cl. 98-121.00r.

Laney, Barton H., to Searle, G. D., & Co. Liquid scintillation coincidence detector. 3,772,512, Cl. 250-366.000.

Lang, Andre, to Societe Nationale des Petroles d'Aquitaine. Synthesis of aliphatic amino and/or carboxy compounds. 3,772,358, Cl. 260-404.000.

Langdon, J. Phillip: *See*—
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Langdon, Jack L., to International Business Machines Corporation. Process for fabricating passivated transistors. 3,771,218, Cl. 29-578.000.

Lange, Gerhard; and Peche, Gerhard, to Siemens Aktiengesellschaft. Gas-discharge overvoltage arrester. 3,772,570, Cl. 317-62.000.

Lanham, Richard D.: *See*—
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Shapiro, Stanley; Goldman, Alan J.; Tyler, Derek E.; and Lanham, Richard D., 3,772,095.

Larkin, Artemas M., to Lockheed Aircraft Corporation. Drive mechanism. 3,771,376, Cl. 74-96.000.

Larsen, Arthur Lee, to Marathon Oil Company. Anti-icing gasoline composition. 3,771,980, Cl. 44-72.000.

Larsen, Laurits Aage Berg, to Gebrueder Buehler AG. Method and device for regulating the temperature of rotating grinding rolls having a hollow interior. 3,771,591, Cl. 165-1.000.

Larson, Harold R., to American Smelting and Refining Company. Process for de-selenizing copper. 3,772,001, Cl. 75-93.0ad.

Larsson, Kare. Process for preparing an aqueous monoglyceride ointment base and product thereof. 3,772,446, Cl. 424-365.000.

Lauchlan, Robert L.; and Snodgrass, Hugh E., to Uniroyal, Inc. Polymer blend resin compositions. 3,772,408, Cl. 260-876.000.

Laufer, Berex. Key retainer. 3,771,341, Cl. 70-456.00b.

Laustsen, Erik Holm: *See*—
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Lautzenhiser, Argyle Glenn. Coin separator. 3,771,637, Cl. 194-96.00r.

Leaming, Roger M. Oil cleaning device for automotive engines. 3,771,656, Cl. 210-168.000.

Lear Siegler, Inc.: *See*—
Inman, Harold W., 3,771,178.
Pierce, William C.; and Fuller, Paul W., 3,771,812.

Leblond, Jean. Tire building drum having a carcass ply support and fold-over mechanism. 3,772,125, Cl. 156-402.000.

Lebovitz, Bernard, to United States of America, Air Force. Missile launcher. 3,771,412, Cl. 89-1.807.

Lectrolarm Custom Systems, Inc.: *See*—
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Lee, Hsi Lin: *See*—
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Lee, Raymond, Organization, The: *See*—
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Lee, Richard J., to Standard Oil Company (Indiana). Preparation of high molecular weight alkylbenzene sulfonyl chlorides. 3,772,373, Cl. 260c543.00r.

Leech, Edward J.: *See—*
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Leeds and Micallef: *See—*
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Leesona Corporation: *See—*
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Lefebvre, Henri; and Van Bost, Jacques. Process for eliminating insoluble residues formed during the production of adiponitrile by dimerization. 3,772,388, Cl. 260-465.80a.

Lehmann, Walter, to Mirabed A.G. Apparatus for making molded articles from foamed synthetic material. 3,771,770, Cl. 259-7.000.

Lehoux, Ronald: *See—*
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Leiber, Heinz; and Rodi, Anton, to Teldix GmbH. Accelerometer. 3,772,567, Cl. 317-5.000.

Lemon, Stephen C.; and Murray, Robert L., to Dover Corporation. System for loading and unloading a container at its bottom. 3,771,549, Cl. 137-393.000.

Lenz, James E.; and Neal, Wayne R., to General Electric Company. Lamp ballast device. 3,772,565, Cl. 315-276.000.

Leon, Gonzalo S. Inflatable insulating material. 3,771,170, Cl. 2-2.000.

Leonard, Verna M. Rhythm practice console. 3,771,407, Cl. 84-484.000.

Leonhauser, Senta: *See—*
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Lerch, Adolph Felix; Otis, Nick C.; and Montgomery, John D., to Advance Housing Corporation. Prefabricated building and roof panel for same. 3,771,269, Cl. 52-93.000.

Lerner, Irwin S., to Robins, A. H., Company, Incorporated. Intrauterine device inserter. 3,771,520, Cl. 128-127.000.

Lerner, Martin L.: *See—*
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Lescarden Ltd.: *See—*
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Leskin, Morton B. Lamp flashing circuit. 3,772,564, Cl. 315-200.00a.

Lesyk, Joseph N.; Ludwig, David P.; and Monahan, Jack J., to Western Electric Company, Incorporated. Compliant bonding. 3,771,711, Cl. 228-4.000.

Levin, Nathan. Stop motion apparatus for knitting machines. 3,772,487, Cl. 200-61.130.

Levy, Richard H.; and Janes, George Sargent, to Jersey Nuclear-Avco Isotopes Incorporated, mesne. Method of and apparatus for the separation of isotopes. 3,772,519, Cl. 250-284.000.

Lew, Baak W., to ICI America, Inc. Glycoside compositions and process for the preparation thereof. 3,772,269, Cl. 260-210.00r.

Lewis, Howard M.: *See—*
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Lewis, Jay L., to Robertshaw Controls Company. Control device with concealed selector means and method of making the same. 3,771,387, Cl. 74-566.000.

Leymaster, Homer N.: *See—*
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Leyrat, Pierre J., to Societe Anonyme: Poclain, Le Plessis-Belleville. Public works machines. 3,771,610, Cl. 173-46.000.

Lezhen, Iosif Solomonovich; Ulyanov, Mikhail Grigorievich; Barilchenko, Vitaly Sergeevich; and Mokritsky, Pavel Sergeevich. Method of producing fur products and a device for carrying out the method. 3,772,108, Cl. 156-68.000.

Libbey-Owen-Ford Company: *See—*
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Liberty Glass Company: *See—*
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May, Franz; and Wendland, Broder, 3,772,458.
Theml, Horst, 3,771,679.

Lieb, Nathaniel H.; and Caley, Samuel Scott, to Syndent Corporation. Water flush cuspidor. 3,771,226, Cl. 32-22.000.

Lilly, Eli, and Company: *See—*
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Gerzon, Koert; and Murphy, Hubert W., 3,772,270.
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Limberg, Jaroslav: *See—*
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Limes, Robert W.: *See—*
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Lind, Roland Ingemar. Devices for teaching pupils the art of swimming. 3,771,182, Cl. 9-337.000.

Lindell, John P.; and Hanson, Charles B., to Koehring Company. Steering mechanism for trencher. 3,771,241, Cl. 37-86.000.

Linden, Richard Eugene, to Bell Telephone Laboratories, Incorporated. Electromechanically actuated fluid switch. 3,771,567, Cl. 137-625.440.

Lindstrom, Harold Richard: *See—*
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Linehan, John Henry, 49% to Fails, James C. Shell catching accessory for firearms. 3,771,248, Cl. 42-1.00r.

Linstromberg, William J.: *See—*
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Liska, John W.; and Beckman, Joseph A., to Firestone Tire & Rubber Company, The. Reinforced by scrap rubber char. 3,772,242, Cl. 260-41.50r.

Little, Carl H., to Weber-Knapp Company. Cover mounting hinge and counter balance mechanism and method of mounting same. 3,771,194, Cl. 16-190.000.

Little, Little J.: *See—*
Hunter, Joe S.; Bailey, Escar L.; and Little, Little J., 3,771,369.

Little, Robert K., to RKL Controls, Inc. Lined pinch valve body. 3,771,758, Cl. 251-4.000.

Litton Systems, Inc.: *See—*
Owen, Alex B., 3,772,631.

Liu, Chong Tan, to Hooker Chemical Corporation. Bearing surface. 3,771,977, Cl. 29-195.00p.

Livesay, Richard G., to Minnesota Mining and Manufacturing Company. Method of tagging with microparticles. 3,772,200, Cl. 252-301.10r.

Ljungdahl, Erland Samuel; and Ekstrom, Lars Axel. Producing a plane or conical optical reference surface. 3,771,876, Cl. 356-138.000.

Lloyd, Samuel H., III: *See—*
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Lockheed Aircraft Corporation: *See—*
Hoss, Warren A., Sr.; and Kilpatrick, Robert H., 3,771,820.
Larkin, Artemas M., 3,771,376.

Lockwood, Donald W., to United States of America, Navy. Vaporific damage measurement arena. 3,771,620, Cl. 181-.5np.

Lodolini, Marcello, to Eastman Kodak Company. Liquid crystal compositions. 3,772,210, Cl. 252-408.000.

Loffreda, Albert, to Communications Satellite Corporation. Satellite communications system with super frame format and frame segmented signalling. 3,772,475, Cl. 179-15.0bs.

Logic Systems Corporation, Limited: *See—*
Cavanagh, John R., 3,771,588.

Lohbauer, Kenneth R.: *See—*
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Cryder, John R.; Erickson, Rodney R.; Lohbauer, Kenneth R.; and Scheidt, James E., 3,771,310.

Lohnstein, Burton, to United States of America, Army. Compartmented bag for automatic loading. 3,771,459, Cl. 102-97.000.

Loichen, Erwin, to Zargun Fabrik fur Spezialkunstsoff maschinen gmbH. Injection molding machine. 3,771,698, Cl. 222-413.000.

Loichen, Erwin. Injection molding apparatus. 3,771,935, Cl. 425-146.000.

Lombardino, Joseph George, to Pfizer Inc. Anti inflammatory imidazoles. 3,772,441, Cl. 424-273.000.

Lone Star Cement Corporation: *See—*
Haldas, Walter J.; and Faust, Jesse A., 3,772,045.

Loomis, Charles M. Pre-assembled unitarily-insertable hanger-attached elevator shaft entrance construction. 3,771,268, Cl. 52-30.000.

Loral Corporation: *See—*
Schwartz, Jacob H., 3,772,566.

Lord, Bernard W.: *See—*
Wilk, Stanley H.; and Lord, Bernard W., 3,772,627.

Lorenz, Harald: *See—*
Boesenberg, Heinz; Frensch, Heinz; and Lorenz, Harald, 3,772,396.

Louder, Nevitt M.; and Ferrie, Ronald, to Fisher Scientific Company. Method and apparatus for analyzing blood properties. 3,772,591, Cl. 324-30.00r.

Louzon, Theodore John, to Western Electric Company Incorporated. Method of encapsulating an electrical device in insulating and metal materials. 3,772,079, Cl. 117-217.000.

Lovell, Calvin H., to Searle, G. D., & Co. 2,2-Disubstituted omega-(1,4-diazabicyclo (4.4.0)-decane)alkanamides and related compounds. 3,772,300, Cl. 260-268.0bc.

Lovin, Joseph R.: *See—*
Christian, Donald K.; and Lovin, Joseph R., 3,771,201.

Lowell, Seymour; and Kapp, Stewart. Method of determining desorption isotherm curve and of scanning hysteresis. 3,771,367, Cl. 73-432.0ps.

Lowrance, William W., Jr., to Eastman Kodak Company. Process for the synthesis of phenyl esters. 3,772,389, Cl. 260-465.00d.

LTV Aerospace Corporation, mesne: *See—*
Giraud, Francois L., 3,771,461.

Lubrizol Corporation, The, mesne: *See—*
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Lucas, Joseph, (Industries) Limited: *See—*
Bennett, Derek Roger; and Shotton, Gordon John, 3,772,089.

Lucas, Robert Armistead; and Blatter, Herbert Morton, to Ciba-Geigy Corporation. 2-Acylimino-1,3-diazacyclo alkenes and alkadienes. 3,772,291, Cl. 260-256.50r.

Lucht, Wilbert A.: *See—*
Donecker, Frederick W.; and Lucht, Wilbert A., 3,772,454.

Luckenbach, Roy L., to Burlington Industries, Inc. Applying antistatic finish on synthetic textiles. 3,772,070, Cl. 117-138.8ua.

Luckett, Gary C.; and Sonoda, George, to International Business Machines Corporation. FET interface circuit. 3,772,607, Cl. 330-35.000.

Luckey, George W.; and De Boer, Charles D., to Eastman Kodak Company. Photosensitive element containing a photosensitive crystalline polyacetylenic compound and a photoconductive inorganic metal salt. 3,772,027, Cl. 96-88.000.

Ludwig, David P.: *See—*
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Lunden, Walter W.: *See—*
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Luthi, Oscar; and Carlsmith, Lawrence A., to Improved Machinery, Inc. Apparatus and method for thickening and washing suspensions containing fibrous material. 3,772,144, Cl. 162-210.000.

Lyaskin, Jury Grigorievich: *See—*
Dzhagatspantan, Rafael Vachaganovich; Yakimenko, Leonid Markovich; Lyaskin, Jury Grigorievich; Filippov, Mikhail Tikhonovich; and Zetkin, Viktor Ivanovich, 3,772,172.

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Lyons, Raymond T.; and Pladek, Max, to Textile Cutting Corporation. Web cutting process. 3,772,112, Cl. 156-88.000.

Lysenko, Alexel Petrovich: *See—*
Yastrebov, Igor Alexandrovich; Benderovsky, Vladimir Valerianovich; Schepotiev, Alexandr Ivanovich; Lysenko, Alexel Petrovich; Dvornikov, Petr Alexandrovich; and Korotkov, Anatoly Fedorovich, 3,771,744.

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Mabrey, Lindell E.; and Miller, Richard R., said Miller, Richard R., assor. to Globe Glass Manufacturing Co. Display system for large color transparencies. 3,771,245, Cl. 40-106.100.

Macchine Agricole S.p.A.: *See—*
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MacKenzie, Raymond W.: *See—*
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Macovski, Albert, to American Express Investment Management Company. Sonic image transducer using a storage camera. 3,772,457, Cl. 178-6.800.

MacPherson, James R.; and Serbu, Paul W., to Susquehanna Corporation, The. Aspirator. 3,771,913, Cl. 417-179.000.

Madures, John W.: *See—*
Armstrong, Robert G.; Deszyck, Edward J.; Madures, John W.; and Young, Robert H., 3,771,533.

Mafli, Reinald W., to Kumag A.-G. Driving units for producing a reciprocatory and oscillatory motion simultaneously. 3,771,644, Cl. 198-220.0ca.

Magee, Vincent, to Ferranti, Limited. Semiconductor devices. 3,772,077, Cl. 114-212.000.

Maggioni, Franco, to Innocenti Meccanica S.p.A. Transfer assembly for transferring workpieces from station to station along a press. 3,771,669, Cl. 214-1.0bb.

Magnavox Company, The: *See—*
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Magnusson, Olov Tage: *See—*
Kenneryd, Karl Gosta Lennart; and Magnusson, Olov Tage, 3,771,320.

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Maher, Robert: *See—*
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Bircher, Johannes; Weidenhagen, Rudolf; Mainz, Uber; Reinicke, Hans; Leonhauser, Senta; and Bauer, Ingeborg, 3,772,433.

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Maksy, Edward W., to Climate Control Systems, Inc., mesne. Modular air conditioning equipment. 3,771,321, Cl. 62-298.000.

Malden Mills, Inc.: *See—*
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Malloy, James Oscar; Dunnill, Peter; and Lilly, Malcom Douglas, to M.S.E. Holdings, Limited. Centrifugal photometric analyzer. 3,771,878, Cl. 356-197.000.

Malone, Laurence A. Glazing composition. 3,772,238, Cl. 260-33.40r.

Mandelik, Bernard G.; and Greene, Marvin I., to Pullman Incorporated. Process for making fuel gas. 3,771,261, Cl. 48-214.000.

Manthey, Joseph W.: *See—*
Fico, Sally S.; and Manthey, Joseph W., 3,772,028.

Maquelin, Charles. Method for the manufacture of an element of watch case and element of watch case obtained by this method. 3,772,096, Cl. 148-6.300.

Marathon Oil Company: *See—*
Larsen, Arthur Lee, 3,771,980.
Webb, Thomas O., 3,771,602.

Marban, Enrique G. Reflective illusion device. 3,772,511, Cl. 240-10.00r.

Marcy, Rene Henri Pierre: *See—*
Robba, Max Fernand; Marcy, Rene Henri Pierre; and Duval, Denise Jeanne Claude, 3,772,295.

Marine Protein Corporation, mesne: *See—*
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Marino, Salvatore J.: *See—*
Berry, Chester R.; and Marino, Salvatore J., 3,772,031.

Marlin, Lawrence; and Schwarz, Eric George, to Union Carbide Corporation. Process for production of a polyurethane foam from a heat curable froth. 3,772,224, Cl. 260-2.5bd.

Marquette, John Lester. Plug-in equipment storage unit. 3,772,572, Cl. 317-101.0dh.

Marroni, Michael A., Jr.; and Peck, Daniel A., to Combustion Engineering, Inc. Steam generator cradle suppon. 3,771,499, Cl. 122-510.000.

Marsalka, Joseph P.; and Spademan, Charles F., to MI², Inc. Magnetic tape data handling system employing dual data block buffers. 3,772,657, Cl. 340-172.500.

Marsh, Donald D.: *See—*
Auer, John H., Jr.; Anderson, Robert F.; Kovalcik, Vincent P.; Marsh, Donald D.; Silley, Henry C.; and Smith, Willis R., 3,772,640.

Mart, Harry A. Child-proof container cap. 3,771,681, Cl. 215-9.000.

Martens, Charles H., to United States of America, Army. Apparatus for welding by translational friction. 3,771,706, Cl. 228-2.000.

Martin, Edward Albert, to Solartron Electronic Group, Limited, The. A.C. to D.C. converter circuits. 3,772,582, Cl. 321-47.000.

Martin, James C.; Meen, Ronald H.; and Lewis, Howard M., to Eastman Kodak Company. N-Hydroxymethyl compounds, compositions containing such compounds and cellulose-containing textile materials treated therewith. 3,772,292, Cl. 260-256.40f.

Martin Marietta Corporation: *See—*
Jackson, Albert M., 3,772,674.
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Martin Processing Company, Incorporated: *See—*
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Martins, Samuel J., to Airheart Products, Inc. Disc brake caliper movement control. 3,771,625, Cl. 188-71.00b.

Marton, Zsolt: *See—*
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Maruta, Rikio: *See—*
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Marvel, Carl S.; Higgins, Jerry G.; and Pense, Rolf, to Research Corporation. Method for preparing 2-arybenzazoles. 3,772,309, Cl. 260-296.00b.

Marzocchi, Alfred, to Owens-Corning Corporation. Tire construction and assembly technique. 3,772,130, Cl. 161-55.000.

Mascetti, Joseph A., Jr., to Plastofilm Industries, Inc. Shipping holder for spark plugs or the like. 3,771,646, Cl. 206-65.00k.

Mashkovsky, Arkady Vsevolodovich: *See—*
Bezrukov, Alexandr Fredorovich; Balykov, Petr Semenovich; Mashkovsky, Arkady Vsevolodovich; and Vasin, Eduard Lvgenievich, 3,771,633.

Masi, James Vincent, to Bunker Ramo Corporation. Touch responsive electric switch and device for the use thereof. 3,772,685, Cl. 340-365.00c.

Massachusetts Institute of Technology: *See—*
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Massell, Edward M., to Electronic Associates Inc. System and method for on-line simulation of bulk power system transients at very high speeds. 3,772,505, Cl. 235-185.000.

Masuda, Noboru; Nishino, Yu; and Kase, Hiroaki, to Denki Onkyo Co., Ltd. Method for forming strips on semiconductor device. 3,772,100, Cl. 156-3.000.

Matchett, Robert W.: *See—*
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Matsumoto, Seiji; and Honjo, Satoru, to Xerox Corporation. Electroconductive paper. 3,772,173, Cl. 204-165.000.

Matsumoto, Takaaki; and Nakamura, Takeshi, to Fuji Photo Film Co., Ltd. Web feeding apparatus using fluid support. 3,771,702, Cl. 226-7.000.

Matsuo, Masaharu. Cardboard box blank and apparatus for making the same. 3,771,425, Cl. 93-58.20r.

Matsushima, Norihisa: *See—*
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Matsushita Electronics Corporation: *See—*
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Matteson, William M. Longitudinally and vertically adjustable arch support for a shoe. 3,771,529, Cl. 128-597.000.

Matui, Megumi, to Galsken Co., Ltd. Self-teaching system. 3,771,240, Cl. 35-9.00c.

Matunami, Mutuo: *See*—
Tuzi, Takater; Awane, Katunobu; and Matunami, Mutuo, 3,771,219.

Mavis, Mary Ann E. Method of making a textile fabric. 3,771,479, Cl. 112-266.000.

Max Co., Ltd.: *See*—
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Max-Planck-Gesellschaft, zur Forderung der Wissenchaften e.V.: *See*—
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May, Franz; and Wendland, Broder, to Licentia Patent-Verwaltungs-GmbH. Method for reducing the bandwidth of communication signals. 3,772,458, Cl. 178-6.000.

May, James L. Brassiere. 3,771,528, Cl. 128-498.000.

Mayer, Edward A., to Texaco Inc. Automatic fuel dispensing nozzle. 3,771,575, Cl. 141-128.000.

Mayer, Edward A., to Texaco Inc. Automatic fuel dispensing nozzle. 3,771,577, Cl. 141-209.000.

Mayer, Edward H.; Schunk, Frederick B.; and Rahn, Hilton N., to Bethlehem Steel Corporation. Very thin steel sheet and method of producing same. 3,772,091, Cl. 148-12.000.

Mayer, Mayer, Jr.; and Baril, Albert, Jr., to United States of America, Agriculture. Method for electrostatic yarn bulking and impregnating. 3,771,202, Cl. 28-75.0wt.

Mayer, Warren C., to Johnson & Johnson. Method of forming tissue laminate. 3,772,124, Cl. 156-324.000.

Mayernik, Andrew B.; Beckwith, Edwin F.; and Hubbard, Howard N., to United States Steel Corporation. Safely disconnectable flow limiter valves for a high pressure fluid line. 3,771,762, Cl. 251-148.000.

Mc Inerny, George P., to Pennsylvania Research Associates, Inc. Mechanism for feeding, separating and stacking sheets. 3,771,783, Cl. 271-125.000.

McBean, William N., to Tennco Oil Company. Method of secondary recovery of hydrocarbons. 3,771,598, Cl. 166-268.000.

McCabe, John P.; and Joscelyn, Edwin, to Instrument Systems Corporation. Stethoscope headset. 3,772,478, Cl. 179-1.0st.

McConnell, William C.; and Rahn, Henry W., to PPG Industries, Inc. Method of controlling weeds with a combination of an organic herbicide and potassium azide. 3,771,994, Cl. 71-111.000.

McCoy, Larry G.; and Sharpe, Robert E., to Liberty Glass Company. Containers and method of preparing same. 3,772,061, Cl. 117-72.000.

McDermott, Clifton Eugene; and Steinicke, Darrell B., to Bio-Logics, Inc. Patient, object data correlation method. 3,771,717, Cl. 235-61.12r.

McDonald, Bertrand N.: *See*—
Sprague, Theodore S.; Schlicting, John; and McDonald, Bertrand N., 3,771,497.

McDonald, George L.; and Jackson, Michael L. Method of repairing knife edge fins in spacer fluid seals. 3,771,798, Cl. 277-9.000.

McDonnell Douglas Corporation: *See*—
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Gray, James G.; and Sontag, Kenneth E., 3,771,278.
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McGahren, William James; and Kunstmann, Martin Paul, to American Cyanamid Company. Preparation of 2-chloro-7-hydroxy-11 -(4-methyl-1-piperazinyl)-di benz(b,f)-oxazepine. 3,772,151, Cl. 195-51.00r.

McGee, Roger V., Jr. Anchor handling device. 3,771,487, Cl. 114-210.000.

McGowen, Harold E., Jr., to Camco, Incorporated. Fluid system for moving subsurface well equipment in well tubing. 3,771,597, Cl. 166-77.000.

McGraw-Edison Company: *See*—
Mikulecky, Harvey W.; and Huber, William J., 3,772,590.

McKay, Alexander S.: *See*—
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McKean, Edwin M.: *See*—
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McKee, Douglas W., to General Electric Company. Method of treating a carbon current collection brush and brush resulting therefrom. 3,772,080, Cl. 117-228.000.

McKee, Leffler H.; and Roeber, Henry W., to GTE Sylvania, Incorporated. Color cathode ray tube of the shadow mask variety. 3,772,555, Cl. 313-85.00s.

McKinnon, Neil Alexander: *See*—
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McMath, Jack A.; and Wilson, Fred A., to Dover Corporation. Vapor recovery adapter. 3,771,566, Cl. 137-625.490.

McPherson, James B., Jr.: *See*—
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Mead, Ralph T., to Wurlitzer Company, The. Battery cell construction. 3,772,083, Cl. 136-20.000.

Meade, Hazel W.: *See*—
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Means, William A., to Applied Motors, Inc. Dynamoelectric machine with ceramic permanent magnets. 3,772,546, Cl. 310-154.000.

Medema, Dirk: *See*—
Pilgram, Kurt H.; Medema, Dirk; Soloway, Samuel B.; and Gaertner, George W., Jr., 3,772,391.

Meeh, Robert F. Refuse bag holder. 3,771,752, Cl. 248-98.000.

Meen, Ronald H.: *See*—
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Mehlan, Bernd: *See*—
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Meininger, Fritz; and Kohlhaas, Folker, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Water-soluble reactive xanthenium dyestuffs. 3,772,335, Cl. 260-336.000.

Meisel, Frederick W., Jr.: *See*—
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Meissner, Josef: *See*—
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Mejan, Henry, Jr. Shells for holding soft drink bottles. 3,771,689, Cl. 220-69.000.

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Mellen, William F., to Mellen, Alice M. Two-way plow. 3,771,607, Cl. 172-212.000.

Mendelsohn, Morris A.; and Ruffining, Charles R., to Westinghouse Electric Corporation. Pressure sensitive thermosetting resinous adhesive tapes. 3,772,064, Cl. 117-122.00p.

Menefee, Emory: *See*—
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Menon, M Krishna, to Astra Lakemedel Aktiebolag. Method for the treatment of Parkinsonism and depression. 3,772,440, Cl. 424-273.000.

Meonikow, Leon. Aircraft-landing strip device. 3,771,747, Cl. 244-114.00r.

Merck & Co., Inc.: *See*—
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Merigoux, Jean-Marie: *See*—
Friberg, Jean-Marie Eugene; and Merigoux, Jean-Marie, 3,771,925.

Mermelstein, Seymour, to Tyco Laboratories, Inc. Precision linear motion converting and position measuring apparatus. 3,771,375, Cl. 74-89.200.

Merola, Anthony, to Amerola Products Corporation. Adjustable material handling device. 3,771,826, Cl. 294-114.000.

Merrill, Stewart H.: *See*—
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Merriman, Roger W.: *See*—
Flanigan, Eugene E.; and Merriman, Roger W., 3,771,916.

Merry, Roydon William; Parsons, Stuart L.; and Reynolds, Charles Edward, to AMP Incorporated. Electrical connecting device for component wiring panels. 3,772,571, Cl. 317-99.000.

Mertens, George Firmin; and Page, Richard Stockbridge. Vibration isolators for evacuated scientific instrument. 3,772,510, Cl. 250-311.000.

Messerchmitt-Bolkow-Blohm GmbH: *See*—
Schnabelle, Werner; Zeyher, Fritz; and Weis, Dieter, 3,771,417.

Messinger, Werner, to Braun Aktiengesellschaft. Shaver construction. 3,771,842, Cl. 30-43.920.

Metallgesellschaft AG: *See*—
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Metcalfe, C. B., Food Machinery, Ltd.: *See*—
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Meyer, Alfred L., to Anetaberger Brothers, Inc. Die cut unit. 3,771,403, Cl. 83-628.000.

Meyer, Dieter B., to Skil Corporation. Adjustable cutting tool. 3,771,895, Cl. 408-174.000.

Meyer, William J.; Sienkiewicz, Boleslaw; and Byrwa, John J., to General Foods Corporation. Static bed agglomeration. 3,772,037, Cl. 426-453.000.

Meylan-Rochat, Andre, to Parechoc S.A. Potentiometer. 3,772,629, Cl. 338-154.000.

Mezoff, Milton, to Artmor Services, Inc. Disposable cigarette holders. 3,771,535, Cl. 131-187.000.

Mhatre, Nagesh Shamrao; and Boguslaski, Robert Charles, to Miles Laboratories, Inc. Bis(coumarinyl) phosphates. 3,772,340, Cl. 260-343.20p.

Micallef, Lewis A., to Leeds and Micallef. Safety closure assembly. 3,771,685, Cl. 215-9.000.

Michael, Harold J., to Rockwell International Corporation. Cermet protective coating glass frit. 3,772,043, Cl. 106-48.000.

Michalski, Raymond J.; and Cochrane, Chappelle C., to Nalco Chemical Company. Process and compositions for controlling foaming in aqueous. 3,772,207, Cl. 252-321.000.

Micromatic Industries, Inc.: *See*—
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Mihaly, Michael F.; and Faroni, Charles C., to Amerace Esna Corporation. Flush mounting insert for sandwich panels. 3,771,272, Cl. 52-617.000.

Mikeska, Alan J., to United States of America, Air Force. Free-floating rocket nozzle insert. 3,771,726, Cl. 239-265.110.

Mikulecky, Harvey W.; and Huber, William J., to McGraw-Edison Company. Method of production testing fuses and circuit for accomplishing such testing. 3,772,590, Cl. 324-28.00r.

Mildenberger, Hilmar: *See*—
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Schlobohm, Roland T.; and Millay, Herbert D., 3,772,359.

Miller, Darrow L., to North American Rockwell Corporation. Rapid ultrasonic inspection apparatus. 3,771,354, Cl. 73-67.700.

Miller, George T., to Hooker Chemical Corporation. Metal plating of synthetic polymers. 3,771,973, Cl. 29-195.000.

Miller, Keith A.: *See*—
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Stevens, Laurence G.; Miller, Marilyn; and Goeller, Leonhard A., 3,772,424.

Miller, Orville L. Pavement material applying apparatus. 3,771,893, Cl. 404-101.000.

Miller, Richard R.: *See*—
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Miller, Robert C.: *See*—
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Miller, Stephen H.; and Tucker, Archie J., to Eastman Kodak Company. Film cartridge with guide finger. 3,771,864, Cl. 352-78.00r.

Mills, Geoffrey Spottiswoode. Milking inflations. 3,771,494, Cl. 119-14.470.

Mills, George T.; and Okcuoglu, Selahattin A., to International Business Machines Corporation. Type element support. 3,771,635, Cl. 197-52.000.

Mills, King L., to Phillips Petroleum Company. Electrode for electrolytic conversion cells including passage means in the electrode for electrolyte flow through the electrode. 3,772,201, Cl. 204-277.000.

Milnes, Malcolm Howard, to Coalite and Chemical Products Limited. Separation of chlorophenols. 3,772,394, Cl. 260-623.00r.

Milsom, Daniel, to Cities Service Oil Company. Lubricating oil composition. 3,772,197, Cl. 252-33.200.

Minnesota Mining and Manufacturing Company: *See*—
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Minoda, Minoru; Yoshida, Tetsuo; and Chikamasa, Hiroshi, to Fuji Photo Film Co., Ltd. Method for floating and drying a web. 3,771,235, Cl. 34-10.000.

Minoda, Minoru; Yoshida, Tetsuo; and Chikamasa, Hiroshi, to Fuji Photo Film Co., Ltd. Apparatus for drying a web by use of an air jet flow. 3,771,239, Cl. 34-156.000.

Minolta Camera Kabushiki Kaisha: *See*—
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Mirabed A.G.: *See*—
Lehmann, Walter, 3,771,770.

Mitchell, Barbara: *See*—
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Mitchell, Hal D., to A-T-O Inc. Athletic protective equipment. 3,771,171, Cl. 2-2.000.

Mitchell, James; Bassett, Douglas Austin; Glass, David George; Hoffman, Larry Allan Rodney; Postle, William Arnold; and Johnson, Dennis William, to Saskatchewan Power Corporation. Vibration measuring assemblies for energized and non-energized power line viration measurements. 3,771,356, Cl. 73-71.50r.

Mitchem, Luther C.: *See*—
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Mitschelen, Laurel I.: *See*—
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Mitsubishi Chemical Industries, Ltd.: *See*—
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Miyauchi, Akio, to Naigai Rubber Industry Co., Ltd. Method of producing the seat ring of a butterfly valve and the seat ring thereof. 3,771,764, Cl. 251-306.000.

Miyazako, Takushi: *See*—
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Mlkvy, William P.; and Tucci, Raymond J. Effervescent mouthwash tablet. 3,772,431, Cl. 424-44.000.

Mo Och Domsjo Aktiebolag: *See*—
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Mobil Oil Corporation: *See*—
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Radecki, Tony, 3,771,517.

Modine Manufacturing Company: *See*—
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Moffett, Robert B., to Upjohn Company, The. Certain triazolobenzodiazepinone compounds and their production. 3,772,318, Cl. 260-308.00c.

Mohar, Douglas D.: *See*—
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Ratts, Kenneth Wayne, 3,772,434.
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Montanvert, Michel; and Jeymond, Jacques, to Cometa S.A. Method and apparatus for optical detection. 3,772,523, Cl. 250-552.000.

Montecatini Edison S.p.A.: *See*—
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Moore, George E., to General Electric Company. Combustion process for producing high surface area silica. 3,772,427, Cl. 423-337.000.

Moore Products Co.: *See*—
Huslin, Theodore J., Jr., 3,771,346.

Moran, Harold J., to Switlik Parachute Co., Inc. Life preserver. 3,771,183, Cl. 9-342.000.

Morbark Industries, Inc.: *See—*
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Moreno, Frederick E.: *See—*
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Moret, Michel A.; and Jousson, Pierre, to Etablissements SOPHIM-DAR. Hydraulically operated hand appliance for personal hygiene. 3,771,186, Cl. 15-22.00r.

Moret, Michel A.; and Jousson, Pierre J., to Institut de Recherche Woog. Reservoir for a liquid pump, including a float valve. 3,771,557, Cl. 137-565.000.

Morgans, David Evan Bryan, to Imperial Chemical Industries, Limited. Filled polytetrafluoroethylene compositions. 3,772,249, Cl. 260-41.00b.

Mori, Kaoru: *See—*
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Morris, Philip, Incorporated: *See—*
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Morrison, Glenn C.; and Shavel, John, Jr., to Warner-Lambert Company. 1,2,4a,5,6,8,9,14,14b-Decahydrobenz a indolo 2,3-g quinolizin-3(4H)-ones. 3,772,306, Cl. 260-288.00r.

Morse Products Mfg.: *See—*
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Mort, Edgar A. Roof truss forming machine. 3,771,439, Cl. 100-100.000.

Mortoly, John L., to Tayler, James L., Manufacturing Company. Surface aligner for panel boards. 3,771,779, Cl. 269-23.000.

Moser, Hermann. Exposure apparatus for electrophotographic reproduction machines. 3,771,867, Cl. 355-14.000.

Moses, James A.: *See—*
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Moslo, Ernest P. Safety device for molding machine. 3,771,936, Cl. 425-153.000.

Motch & Merryweather Machinery Co., The: *See—*
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Motorola, Inc.: *See—*
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Mounce, William R., to Cities Service Research and Development Company. Process for semi-continuous regeneration of catalyst with wash liquid in a closed system. 3,772,211, Cl. 252-414.000.

Mowbray, Terry E.: *See—*
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M.S.E. Holdings, Limited: *See—*
Malloy, James Oscar; Dunnill, Peter; and Lilly, Malcom Douglas, 3,771,878.

Mueller, Eugene Charles. Apparatus for assembling and stacking material. 3,771,673, Cl. 214-82.000.

Muhlhauser, John F.: *See—*
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Muka, Edward, to Eastman Kodak Company. Microfiche image selection device. 3,771,863, Cl. 353-207.000.

Muller, John George. Pressurized rubber for absorbing impact energy. 3,771,778, Cl. 267-140.000.

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Munyon, Julian M.; and Beaty, Ronald W., to Barber-Greene Company. Mobile grade reference device for a paving machine. 3,771,892, Cl. 404-84.000.

Murakami, Takashi, to Ricoh Co., Ltd. Device for selectively setting type bars of calculating machines. 3,771,444, Cl. 101-94.000.

Murakami, Tomoyuki: *See—*
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Muramatsu, Tateo; Aramaki, Kuninori; and Kondo, Yoshikazu, to Bridgestone Tire Company Limited. Oil recovery system. 3,771,662, Cl. 210-242.000.

Murayama, Naohiro; and Hashizume, Hideyuki, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pyroelectric coordinate input process and apparatus. 3,772,518, Cl. 250-211.00r.

Murchie, John Ronald, to True Tech Equipment, Limited. Transfer table and base structure for shaping. 3,771,509, Cl. 125-11.00r.

Mureso, Vladimir: *See—*
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Myers, Robert E., to M&M International Plastics, Inc. Apparatus and method for making fiberglass grating. 3,772,126, Cl. 156-434.000.

Myrtle, James F.: *See—*
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Asahara, Yoshiyuki; Nagarekawa, Osamu; Tsuchiya, Makoto; and Izumitani, Tetsuro, 3,772,006.

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Nakajima, Tomio; Sugita, Sadao; Kishida, Yukichi; Yoshimoto, Masasumi; and Ishida, Noboru, to Konishiroku Photo Industry Co., Ltd. and Sankyo Company, Limited. Silver halide photographic element containing an acetylene sulfonyl compound as hardener. 3,772,23, Cl. 96-67.000.

Nakamoto, Teruyuki; Shingo, Yoshioki; Takeuchi, Mamoru; and Ogawa, Masaru, to Fujikura Densen Co., Ltd. Method of preparing fibrous copper oxide catalyst. 3,772,214, Cl. 252-447.000.

Nakamura, Seishiro, to Kuraray Co., Ltd. Process for production of esters of unsaturated carboxylic acids. 3,772,381, Cl. 260-486.00r.

Nakamura, Soichi, to Nippon Kogaku K.K. Four component zoom lens. 3,771,853, Cl. 350-184.000.

Nakamura, Takeshi: *See—*
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Napoleone, Nunzio; and Swett, Alan M., to Dennison Manufacturing Company. Ticket stacker. 3,771,670, Cl. 214-6.0ba.

Narayan, T. V. Lakshmi: *See—*
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Nasu, Takeo: *See—*
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Neenan, Sidney A.; and Majewski, Norbert, to Amerace Esna Corporation. Display assembly. 3,771,851, Cl. 350-97.000.

Neitzel, Ulrich E. G.; and Andreasen, Frederick J., to Irving Trust Company, mesne. Moist road salt composition and process for making the same. 3,772,202, Cl. 252-70.000.

Nelli, Joseph R.; and Mitchem, Luther C., to First National City Bank, mesne. Device and method for introducing a chemical into a liquid. 3,772,193, Cl. 210-62.000.

Nelson, Charles H.: *See—*
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Nelson, Iver L.: *See—*
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Nelson, James F., to Bobrick Corporation, The. Roll paper dispenser. 3,771,739, Cl. 242-55.300.

Nelson, Nicholas R. Circuit completion game using a rotary, multiple-contact switch. 3,771,791, Cl. 273-130.0ab.

Nepote, Alain Robert, to Etablissements Carpano & Pons S.A. Fishing reel. 3,771,740, Cl. 242-84.20a.

Neumann, Charles G.; Krueger, Harvey R.; and Panock, Walter, to Reynolds Products, Inc. Simplified positive displacement syrup pump assembly for drink machines. 3,771,907, Cl. 417-454.000.

New England Malleable Iron Company: *See—*
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New Process Industries, Inc.: *See—*
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Newberry, James G.: *See—*
Stephenson, Earle W.; Newberry, James G.; and Hazzard, Robert C., 3,771,734.

Newmark, Harold Leon, to Hoffmann-La Roche Inc. Antibiotic compositions containing coumermycin. 3,772,438, Cl. 424-181.000.

Nichols, Duane C.; and Linstromberg, William J., to Whirlpool Corporation. Unitary drive for ice maker mechanism, defrost means and air flow means. 3,771,319, Cl. 62-233.000.

Nichols, Richard A., to Parker-Hannifin Corporation. Vapor recovery. 3,771,317, Cl. 62-54.000.

Nicodemus, Paul Otis; and Wilson, Henry Lewis, to General Electric Company. Flame and moisture resisting impregnating composition for fibrous materials and products thereof. 3,772,455, Cl. 174-121.00a.

Nicoloff, Nick; Courson, Richard B.; and Boden, Robert Lee, to Almo Manifold and Tool Company. Liquid spray system for metal rolling. 3,771,730, Cl. 239-536.000.

Niederhuber, Peter: *See—*
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Nielsen, Alan H., to United States of America, Air Force. Dual gated AGC radar. 3,772,702, Cl. 343-18.00e.

Niemi, Ossi; and Juvonen, Heino, to Toijalan Terasvalmiste Kommanditiyhtio Veljekset Virtanan. Vibrator assembly for concrete mold plates. 3,771,769, Cl. 259-1.00r.

Nienhuis, Rijkent J.; and Busselaar, Cornelis A., to North American Philips Co., Inc. Planar semiconductor device with scribe lines and channel stopper. 3,772,576, Cl. 317-235.00e.

Nighingale, Eric Gordon; and Cullis, Roger, to Rank Organisation, Limited, The. Mask and apparatus used for alignment purposes in photolithography. 3,771,872, Cl. 355-125.000.

Nippon Electric Company, Limited: *See—*
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Nippon Gakki Geizo Kabushiki Kaisha: *See—*
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Nippon Kogaku K.K.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Sheet Glass Co., Ltd.: *See—*
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Nippon Soda Company, Ltd.: *See—*
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Nippondenso Co., Ltd.: *See—*
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Nirenski, Boguslaw K.; and Grover, R. Bruce, to Vinyl Plastics, Inc. Portable rink assembly. 3,771,891, Cl. 404-40.000.

Nishikawa, Mitsuo, to Max Co., Ltd. Binding device. 3,771,707, Cl. 227-66.000.

Nishikawa, Satoru: *See—*
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Nishimura, Kenji; Matsui, Kanenobu; and Hirai, Koichi, to Ube Industries, Ltd. Purification of hexamethylenediamine. 3,772,369, Cl. 260-583.00n.

Nishino, Yu: *See—*
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Nishiyama, Yutaka, to TDK Electronics Company, Limited. Wide-band circulator. 3,772,615, Cl. 333-1.100.

Nissan Motor Company Limited: *See—*
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Nissho Semiconductor Co., Ltd.: *See—*
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Nitto Electric Industrial Co., Ltd.: *See—*
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Nitz, Rolf-Eberhard: *See—*
Beyerle, Rudi; Stachel, Ingerburg Lydia Katharina; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, 3,772,280.

Noguchi, Shunsaku; Kawai, Kiyohisa; Kanai, Yoshio; and Tanayama, Shigeharu, to Takeda Chemical Industries, Ltd. Alkyl 5-(hydroxycyclohexyl)indan-1-carboxylate and derivatives thereof. 3,772,343, Cl. 260-473.00f.

Noguchi, Teruhisa; Hashimoto, Yoshinobu; Uchiyama, Yoshio; and Ueyama, Michio, to Nippon Soda Company, Ltd. Germicidal and fungicidal agent and use thereof. 3,772,445, Cl. 424-340.000.

Noguro, Masao: *See—*
Satoru, Enomoto; Fujioka, Mikio; Noguro, Masao; Wada, Hisayuki; and Saito, Tsuyoshi, 3,772,231.

Nordeen, Donald L., to General Motors Corporation. Power brake booster with no-power operational features. 3,771,316, Cl. 60-550.000.

Nordin, Robert W., to Teletype Corporation. Method of and apparatus for controlling the motion of an electromagnetic actuator. 3,772,623, Cl. 335-253.000.

Norman, Anthony W.; Myrtle, James F.; Midgett, Ronald J.; and Nowicki, Henry G., to United States of America, Health, Education and Welfare. Process for producing Vitamin D_3 metabolite. 3,772,150, Cl. 195-51.00r.

Norman, Robert H., to Fairchild Camera and Instrument Corporation. Solid state switching and memory apparatus. 3,772,660, Cl. 340-173.00r.

Norman, Robert M.; and Barron, Richard H. Fire damage protected offshore oil producing rig. 3,771,604, Cl. 169-1.00a.

North American Philips Co., Inc.: *See—*
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North American Rockwell Corporation: *See—*
Anderson, Dean B., 3,772,528.
Miller, Darrow L., 3,771,354.

North Tool and Mfg. Company: *See—*
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Notbohm, Willard C., to Black Clawson Company, The. Pivotal mounting structures for vertical twin-wire papermaking machine. 3,772,145, Cl. 162-273.000.

Noto, Vincent H.: *See—*
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Notto, Leonard A., to Data Tactics, Inc. Loose-leaf binder apparatus. 3,771,890, Cl. 402-21.000.

Nowak, Bernard E.: *See—*
Economy, James; Cottis, Steve G.; and Nowak, Bernard E., 3,772,250.

Nowak, Hubert H., to Tenneco Inc. Catalytic-reactor with monolithic element. 3,771,967, Cl. 23-288.00f.

Nowak, Ronald R.: *See—*
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Nowicki, Henry G.: *See—*
Norman, Anthony W.; Myrtle, James F.; Midgett, Ronald J.; and Nowicki, Henry G., 3,772,150.

Nudenberg, Walter; and Delaney, Edward A., to Uniroyal, Inc. Butadiene-isoprene copolymer rubber of high CIS content. 3,772,256, Cl. 260-82.100.

Nuzzi, Francis J.: *See—*
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Oakes, Merwin D.; Upson, Lawrence L.; and Ziv, Martin H., to Air Products and Chemicals, Inc. Single step synthesis of triethylene diamine. 3,772,293, Cl. 260-268.00t.

O'Brien, Terrance J., to Purex Corporation, Ltd. Seal arrangement for pump motor leads. 3,772,453, Cl. 174-65.0ss.

Occidental Energy Development Company, mesne: *See—*
Bjorkman, Harry K., 3,772,085.

Oceanography International Corporation: *See—*
Pippen, David L.; and Kramer, Gary R., 3,772,176.

O'Connor, Thomas J. Electrical machining structure. 3,772,494, Cl. 219-69.00g.

Odenz, Lawrence; and Kane, Donald D., to T.P.S., Inc. Vehicle alarm system. 3,772,645, Cl. 340-65.000.

Odone, Giovanni, to Silma S.p.A. Synchronizing system to synchronize the speed of a DC motor with the frequency of a command pulse train. 3,772,580, Cl. 318-318.000.

Oehler, Hans Hermann; and Jansen, Johannes, to Fried Krupp Huttenwerke AG. Centrifugal casting mold. 3,771,755, Cl. 249-135.000.

Oeriu, Ion: *See—*
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Oertel, Gunter: *See—*
Von Gizycki, Ulrich; Oertel, Gunter; and Beck, Gunther, 3,772,313.

Officine Meccaniche Danieli: *See—*
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Ogawa, Masaru: *See—*
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Ogawa, Masaya, to Minolta Camera Kabushiki Kaisha. Transfer type electrophotographic duplicating apparatus. 3,771,866, Cl. 355-3.000.

Ogliby, Lydia Phippen. Honey-extracting method. 3,771,179, Cl. 6-12.00a.

Ohi, Reiichi: *See—*
Yoneyama, Masakazu; Shimamura, Isao; Wano, Haruhiko; and Ohi, Reiichi, 3,772,021.

Ohkubo, Kinji: *See—*

Tsuji, Nobuo; Miyazako, Takushi; Ohkubo, Kinji; and Kato, Kazunobu, 3,772,024.
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Ohmori, Muneki: *See—*
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Ohrberg, Carl Verner; and Petersen, Carsten Georg Otto, to Danfoss A/S. Rotary-piston machine. 3,771,905, Cl. 418-61.000.
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Ohya, Minoru: *See—*
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Okada, Motohiro, to Honda Giken Kogyo Kabushiki Kaisha. Self-retracting type seat belt device. 3,771,742, Cl. 242-107.400.
Okada, Yashiyuki: *See—*
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Okamura, Hisatake: *See—*
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Okawa, Takashi: *See—*
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Mills, George T.; and Okcuoglu, Selahattin A., 3,771,635.
Okutsu, Eiichi; Iijima, Yoo; and Iwano, Haruhiko, to Fuji Photo Film Co., Ltd. Developing composition for use with photographic materials for the graphic arts. 3,772,022, Cl. 96-66.00r.
Olin Corporation: *See—*
Shapiro, Stanley; Goldman, Alan J.; Tyler, Derek E.; and Lanam, Richard D., 3,772,092.
Shapiro, Stanley; Goldman, Alan J.; and Tyler, Derek E., 3,772,093.
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Omura, Katsuhiko; and Ikeda, Nubuhisa, to Tone Boring Company Limited. Earth boring apparatus. 3,771,611, Cl. 175-348.000.
Ono, Hisatake: *See—*
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Optical Coating Laboratory, Inc.: *See—*
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Original Hanau Quarzlampen GmbH: *See—*
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Oshima, Shintaro; Watanabe, Teruji; and Ishihara, Hideo, to Kokusai Denwa Kabushiki Kaisha. Control system for magnetic bubbles. 3,772,661, Cl. 340-174.0tf.
Ostrowski, Henry S.; Roberts, John F.; and Blacker, John G., to Imperial Chemical Industries Limited. Fibrillation process. 3,771,306, Cl. 57-162.000.
Otajima, Tomiji; Oya, Koichi; Nasu, Takeo; and Okamura, Hisatake, to Taiyo Yuden Kabushiki Kaisha. Frequency discriminator with ceramic oscillator. 3,772,605, Cl. 329-117.000.
Othmer, Donald F. Sewage treatment process. 3,772,187, Cl. 210-7.000.
Otis, Nick C.: *See—*
Lerch, Adolph Felix; Otis, Nick C.; and Montgomery, John D., 3,771,269.
Over, David J.; and Burkhardt, Daniel J., to Aluminum Company of America. Capping head and machine. 3,771,283, Cl. 53-201.000.
Owen, Alex B., to Litton Systems, Inc. Resistor and method of making and trimming same. 3,772,631, Cl. 338-195.000.
Owen, William D. Fire alarm. 3,772,671, Cl. 340-229.000.
Owens-Corning Corporation: *See—*
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Klink, Jerome P.; Symbroski, Alex P.; and Shape, Norman R., 3,771,324.
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Page, Richard Stockbridge: *See—*
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Paleologo, Teo; and Ackermann, Jacob, to Societa Italiana Resine S.I.R. S.p.A. Process for preparing paraformaldehyde. 3,772,392, Cl. 260-615.500.
Pallos, Ferenc M.; and Tseng, Chien K., to Stauffer Chemical Company. Derivatives of geranyl phenyl ethers. 3,772,365, Cl. 260-348.00r.
Palmer, Dale A., to Monroe Auto Equipment Co. Pressurized shock absorber. 3,771,626, Cl. 188-298.000.
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Paramonoff, Elpidifor, to Standum, Inc. End forming station for metallic can body formers and the like. 3,771,345, Cl. 72-349.000.
Pardieck, William J., to Corcoran, R. S., Co. Leakage preventing arrangement for pressurized fluid system such as pumps and the like. 3,771,926, Cl. 415-176.000.
Parechoc S.A.: *See—*
Meylan-Rochat, Andre, 3,772,629.
Parham, Darryl V. Automatic audio-visual program control apparatus. 3,772,473, Cl. 179-100.20s.
Park, Glenn S.: *See—*
Herpich, William A.; Park, Glenn S.; and Palmer, George W., 3,771,675.
Parker, John A.; and Riccitiello, Salvatore R., to United States of America, National Aeronautics and Space Administration. Flexible fire retardant polyisocyanate modified neoprene foam. 3,772,220, Cl. 260-2.501.
Parker-Hannifin Corporation: *See—*
Nichols, Richard A., 3,771,317.
Parodi, Alfred. Snow vehicle. 3,771,616, Cl. 180-6.700.
Parry, Keith S.: *See—*
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Parry, Sidney J. S.: *See—*
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Parry, Sidney J. S.; and Whitwell, James H., to Great Lakes Carbon Corporation. Nipple-electrode assembly and joint. 3,771,887, Cl. 403-296.000.
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Paulik, Frank E.; Hershman, Arnold; Roth, James F.; and Knox, Walter R., to Monsanto Company. Production of carboxylic acids and esters. 3,772,380, Cl. 260-488.00r.
Paullus, Clarence Leonard; and Stauffer, Larry Ronald, to AMP Incorporated. Device for sealing electrical connectors. 3,772,637, Cl. 339-102.00r.
Pauquette, James J., to Chandler Evans, Inc. Butterfly valve. 3,771,759, Cl. 251-58.000.
Pavelle Corporation, The: *See—*
Pavelle, Samuel; and Johnstone, Ronald Bernard, 3,771,429.
Pavelle, Samuel; and Johnstone, Ronald Bernard, to Pavelle Corporation, The. Device for holding photographic paper during photographic processing operation. 3,771,429, Cl. 95-100.000.
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Pearson, Ian; Butler, Louis; and Errede, Louis A., to Minnesota Mining and Manufacturing Company. Photographic silver halide emulsions. 3,772,032, Cl. 96-114.000.
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Peck, Daniel A.: *See—*
Marroni, Michael A., Jr.; and Peck, Daniel A., 3,771,499.

Peck, William F., to American Optical Corporation. Method for making monofilament fiber optic ribbons for coherent fiberscopes. 3,772,119, Cl. 156-173.000.

Pedretti, Alberto: *See—*
Wilhelm, Friedrich; Karrer, Johann; and Pedretti, Alberto, 3,771,954.

Pehr, Harold T. Material dispensing container. 3,771,695, Cl. 222-142.400.

Peickii, Jeanette C.: *See—*
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Peickii, Vasalie L.: *See—*
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Peltier, Theodore E.; and Nelson, Iver L., to Hoerner Waldorf. Glue applying method. 3,772,121, Cl. 156-293.000.

Pelzel, Erich; and Pelzel, Reiner, to Metallgesellschaft AG. Wrought zinc alloy. 3,772,007, Cl. 75-178.00a.

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Pera, John D.; and Johnson, Betty S., to Buckman Laboratories, Inc. Method of controlling the growth of algae. 3,771,989, Cl. 71-67.000.

Peraro, James S., to Armstrong Cork Company. Method of forming an embossed foil-covered ceiling panel. 3,771,213, Cl. 29-480.000.

Perez-Mendez, Victor, to University of California, The Regents of the. Radiation camera and delay line readout. 3,772,521, Cl. 250-385.00r.

Perkins, Garry R.; and Mitschelen, Laurel I., to Spotnils, Inc. Pneumatically powered fastener-driving tool. 3,771,710, Cl. 227-130.000.

Perkins-Elmer Corporation, The: *See—*
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Perma-Technological Industries, Inc., mesne: *See—*
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Perreault, Jules, to Bombardier Limited. Endless track having replaceable transverse rods. 3,771,844, Cl. 305-38.000.

Perrier, James M., Sr.: *See—*
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Pester, William B.: *See—*
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Peters, Donald E. Light-cord-concealing chain device. 3,771,309, Cl. 59-78.100.

Petersen, Carsten Georg Otto: *See—*
Ohrberg, Carl Verner; and Petersen, Carsten Georg Otto, 3,771,905.

Peterson, Jeffrey D.: *See—*
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Petrille, Dennis G., to Du Pont de Nemours, E. I., and Company. Drawing and bulking polyester yarns. 3,771,307, Cl. 57-157.0ts.

Petrolite Corporation: *See—*
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Pettengill, Donald Herbert: *See—*
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Pettitt, David J.; and Noto, Vincent H., to Kelco Company. Process for the preparation of propylene glycol alginate from partially neutralized alginic acid. 3,772,266, Cl. 260-209.600.

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Phillips, Robert E., Jr., to Perrier, James M., Sr. Washer agitator and spin tub drive assembly. 3,771,336, Cl. 68-23.700.

Photocircuits Division of Kollmorgen: *See—*
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Photocircuits Division of Kollmorgen Corporation: *See—*
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Pickett, John E. P.: *See—*
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Pierce, William C.; and Fuller, Paul W., to Lear Siegler, Inc. Air suspension with improved axle lifting structure. 3,771,812, Cl. 280-124.00f.

Piersimoni, Eugene, to Sauquoit Fibers Company. Dancing ring assembly for knitting machines. 3,771,331, Cl. 66-146.000.

Pike, Jen E.; and Schneider, William P., to Upjohn Company, The. Silylated derivatives of prostanoic acid and prostaglandins. 3,772,350, Cl. 260-448.80r.

Pilch, John S., to Ware Machine Works, Inc. Material handling apparatus. 3,771,677, Cl. 214-133.000.

Pilgram, Kurt H.; Medema, Dirk; Soloway, Samuel B.; and Gaertner, George W., Jr., to Shell Oil Company. Method of production of hydroxyaryl thioethers from sulfonium compounds. 3,772,391, Cl. 260-609.00f.

Pilkington Brothers, Limited: *See—*
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Pillsbury, Donald M., Jr. Sailboat winch. 3,771,766, Cl. 254-150.000.

Pinto, Albert A.; and Griner, Arthur J. Apparatus for forming thin plastic packaging trays. 3,771,938, Cl. 425-174.0hr.

Pioch, Richard P., to Lilly, Eli, and Company. Cyclopentaneacetamides and cyclopentaneacetonitriles. 3,772,308, Cl. 260-293.760.

Pipala, Dennis R., to Symons Corporation. Dome-supporting shore assembly for an concrete ceiling slab form. 3,771,756, Cl. 249-212.000.

Pippen, David L.; and Kramer, Gary R., to Oceanography International Corporation. Biochemical oxygen demand system. 3,772,176, Cl. 204-195.00b.

Pirault, Jean-Pierre, to Vandervell Products, Limited. Two-stroke internal combustion engines. 3,771,503, Cl. 123-55.00r.

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Planey, William B., to Texas Instruments, Incorporated. Guard ring mesa construction for low and high voltage NPN and PNP transistors and diodes and method of making same. 3,772,577, Cl. 317-235.00r.

Plastofilm Industries, Inc.: *See—*
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Platt, William G. Compound chuck structure. 3,771,804, Cl. 279-121.000.

Plumpton, Norman Albert: *See—*
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Podesva, Ctirad; Musil, Vaclav; and Scott, William T., to Delmar Chemicals, Limited. Process for making pyrazolo-(3,4-d)-pyrimidines. 3,772,294, Cl. 260-256.40f.

Polaroid Corporation: *See—*
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Polichette, Joseph; Leech, Edward J.; and Nuzzi, Francis J., to Photocircuits Division of Kollmorgen Corporation. Sensitized substrates for chemical metallization. 3,772,056, Cl. 117-47.00a.

Polichette, Joseph; and Leech, Edward J., to Photocircuits Division of Kollmorgen. Process for the formation of real images and products produced thereby. 3,772,078, Cl. 117-212.000.

Polnauer, Frederick F. Spray nozzles with spiral flow of fluid and method of constructing the same. 3,771,728, Cl. 239-468.000.

Polorized Corporation of America: *See—*
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Popper, Thomas L., to Schering Corporation. 3,5-Androstadieno-(3,4-d)-(2-imino-3-substituted)-thiazolines, isomers thereof, methods for their manufacture and intermediates useful therein. 3,772,283, Cl. 260-239.500.

Poran, Michael, to Officine Meccaniche Danieli. Continuous centrifugal casting apparatus for hollow shapes. 3,771,587, Cl. 164-282.000.

Porret, Daniel: *See—*
Batzer, Hans; Habermeier, Juergen; and Porret, Daniel, 3,772,326.

Porsch, Dr.-Ing. H.c.f., K. G., Firma: *See—*
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Porsche, Dr.-Ing. H.c.f., K. G., Firma: *See—*
Porsche, Ferdinand Alexander; and Bauer, Theodor, 3,771,807.

Porsche, Ferdinand Alexander; and Bauer, Theodor, to Porsche, Dr.-Ing. H.c.f., K. G., Firma. Supporting frame of a one-track sliding vehicle. 3,771,807, Cl. 280-16.000.

Porta Systems Corporation: *See—*
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Du Luca, Paul V.; and Drews, Gustav, 3,771,743.

Porter, Carl D., to Freid, E. Victor. Golf ball mold production. 3,772,008, Cl. 75-214.000.

Porter, Lee M., to Shell Oil Company. Wax-hydrogenated block copolymer compositions and articles made therefrom. 3,772,234, Cl. 260-28.50b.

Portz, Wilhelm; and Rittershausen, Gunther, to Knapsack Aktiengesellschaft. Process for the manufacture of calcium-carbide of predetermined quality. 3,771,259, Cl. 48-60.000.

Post Office, The: *See—*
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Postle, William Arnold: *See—*
Mitchell, James; Bassett, Douglas Austin; Glass, David George; Hoffman, Larry Allan Rodney; Postle, William Arnold; and Johnson, Dennis William, 3,771,356.

Postupack, Dennis S., to PPG Industries Inc. Transparent electroconductive window. 3,771,211, Cl. 29-473.100.

Potdevin Machine Co.: *See—*
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Potter, Margaret, 20% to Lee, Raymond, Organization, The. Portable pot stand. 3,771,665, Cl. 211-107.000.

Powell, Donald L.; and Pustelnik, Roy J., to Autoresearch Laboratories Incorporated. Test apparatus and method. 3,771,352, Cl. 73-54.000.

Powell, Eric; and Kitchen, Ross M., to Gulf Oil Canada Limited. Suspension polymerization of vinyl chloride. 3,772,226, Cl. 260-17.00a.

PPG Industries, Inc.: *See—*
Cathers, William P., 3,771,671.
Cathers, William P., 3,771,680.
Demarest, Henry M., Jr., 3,771,984.
Kapalko, Erwin J.; and English, William H., 3,772,227.
McConnell, William C.; and Rahn, Henry W., 3,771,994.
Postupack, Dennis S., 3,771,211.
Starr, Eugene W., 3,771,988.
Stewart, John L.; and Bowser, George H., 3,771,276.
Stultz, James C.; Capellman, John J.; and Knavish, Leonard A., 3,771,986.
Tarnopol, Milton S.; and Snyder, Thomas P., 3,772,075.

Prats, Michael, to Shell Oil Company. Vertical permeability test. 3,771,360, Cl. 73-155.000.

Prentice, James B.: *See—*
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Prestridge, Floyd L., to Combustion Engineering, Inc. Electric treater. 3,772,180, Cl. 204-305.000.

Primus Mfg., Inc.: *See—*
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Prior, John Roger: *See—*
Allard, Robert; Bulman, Peter Joseph; Clarke, John Lawton; Prior, John Roger; and Sampson, Donald Frederick, 3,772,693.

Procter & Gamble Company, The: *See—*
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Pullman Incorporated: *See—*
Kang, Chia-Chen; and Schreiber, Robert A., 3,772,425.
Mandelik, Bernard G.; and Greene, Marvin I., 3,771,261.
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Purex Corporation: *See—*
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Purex Corporation, Ltd.: *See—*
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Pustelnik, Roy J.: *See—*
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Quackenbush, Henry. Dry cleaning machine. 3,771,334, Cl. 68-18.00c.

Quaker Oats Company, The: *See—*
Hostettler, Fritz; Huffman, George W.; and Rustad, Norman E., 3,772,221.

Quenwald, William S. Fishing line sinker. 3,771,252, Cl. 43-44.970.

Quimby, Oscar T.; and Prentice, James B., to Procter & Gamble Company, The. Hypohalogenation of gem-diphosphonate esters and phosphonoacetate esters. 3,772,412, Cl. 260-932.000.

Quinn, Frederic R., to Zyrotron Industries, Inc. Firing circuit and transformer. 3,772,586, Cl. 323-35.000.

R-J Industries, Inc.: *See—*
Rausch, Ronald L.; and Jacque, Donald A., 3,771,277.

Radakovich, Louis. Means for molding. 3,771,438, Cl. 100-178.000.

Radecki, Tony, to Modern Faucet Mfg., Co. Oral hygiene device utilizing a pulsed jet of water. 3,771,517, Cl. 128-66.000.

Radzins, Edmund, to Joa, Curt G., Inc. Method for applying attaching tapes to pads. 3,772,120, Cl. 156-264.000.

Rahn, Henry W.: *See—*
McConnell, William C.; and Rahn, Henry W., 3,771,994.

Rahn, Hilton N.: *See—*
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Raleigh, Ronald G.: *See—*
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Ralph, Harold J. Diaper garment with interleaved liner and retainer. 3,771,524, Cl. 128-287.000.

Ram Products Company: *See—*
Schaefer, John H.; and Rehart, M. Andrew, 3,771,398.

Ramello, Piero, to Minnesota Mining and Manufacturing Company. Phenolic couplers. 3,772,002, Cl. 96-100.000.

Randall, Francis R., to Harsco Corporation. Vertical closing tailgate for trucks. 3,771,672, Cl. 214-77.00p.

Randour, Victor: *See—*
Clasper, Thomas; Hutton, Wilfred H.; Kessinger, Orville E., Jr.; Randour, Victor; and Simpson, Fred E., 3,771,843.

Rank Organisation, Limited, The: *See—*
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Raskin, Archie, to Componentry Research and Development Enterprises, Inc. Office machine anti-theft locking apparatus. 3,771,338, Cl. 70-58.000.

Raso, Vito; and Blackmore, George R., to Emerson Electric Co. Wheel modules for overhead tracking sprinkler system. 3,771,719, Cl. 239-177.000.

Rast, Gustaf J., Jr.: *See—*
Barley, Thomas A.; and Rast, Gustaf J., Jr., 3,772,584.

Ratcliff, Graham; and Kemp, Ronald Sidney Thomas, to Jermyn, Thomas. Manufacture of electric components. 3,772,632, Cl. 339-17.0cf.

Ratcliffe, Maurice James: *See—*
Knight, Michael Horace; Mitchell, Barbara; and Ratcliffe, Maurice James, 3,772,404.

Rattman, James A., to Du Pont de Nemours, E. I., and Company. Apparatus for forming images on continuously moving elements. 3,771,871, Cl. 355-102.000.

Ratts, Kenneth Wayne, to Monsanto Company. Insecticidal composition and method containing aryl-methyl phenacyl sulfonium tetrafluoroborates. 3,772,434, Cl. 424-185.000.

Rau, Karlheinz, to Heraeus-Schott Quarzschmelze GmbH. Quartz glass elements. 3,772,134, Cl. 161-164.000.

Rauchwerger, George P. Capacitive moisture control system having a peak detector. 3,771,548, Cl. 137-392.000.

Raupach, E. H. Friedrich. Transformer for producing or measuring high and very high potentials or the measuring currents at high potentials in cascade connection. 3,772,625, Cl. 336-94.000.

Rausch, Richard E., to Universal Oil Products Company. Hydrocarbon isomerization process. 3,772,397, Cl. 260-668.00a.

Rausch, Ronald L.; and Jacque, Donald A., to R-J Industries, Inc. Building and method of constructing same from interconnected panels. 3,771,277, Cl. 52-468.000.

Ravitts, Richard B.: *See—*
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Ray, Elbert L.: *See—*
Brown, Barry M.; and Ray, Elbert L., 3,772,072.

Ray, Harry Edward. Rotary sprinkler head. 3,771,723, Cl. 239-206.000.

RCA Corporation: *See—*
Bond, Donald Spencer, 3,771,483.
Ernst, Robert Lewis; and Yuan, Shui, 3,772,599.
Gange, Robert Allen, 3,772,612.
Hegarty, Brian Anthony; and Trevail, Lewis Herbert, 3,772,575.
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Reafler, Gerald G.: *See—*
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Reddy, Junuthula N., to Bendix Corporation, The. Circuit for providing electronic warm-up enrichment fuel compensation which is independent of intake manifold pressure in an electronic fuel control system. 3,771,502, Cl. 123-32.0ea.

Reed, David A.: *See—*
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Reed, Frederick P.; and Langdon, J. Phillip, to United States of America, Army. Reinforcing movable head for protection against ruptured cartridge cases. 3,771,452, Cl. 102-43.00r.

Reef, Jan. Double acting gage. 3,771,229, Cl. 33-147.00m.

Regel, Erik; and Buchel, Karl-Heinz, to Bayer Aktiengesellschaft. Process for the production of 2-acylimidazoles. 3,772,315, Cl. 260-296.00r.

Rehart, M. Andrew: *See—*
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Reiche, Hans Joachim, to Fromme, Foerderanlagen GmbH. Tow truck system. 3,771,464, Cl. 104-172.0bt.

Reichel, Maximilian Karl, to Kalle Aktiengesellschaft. Diazo-type developing process. 3,772,017, Cl. 96-49.000.

Reichler, Allen S.: *See—*
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Reinicke, Hans: *See—*
Bircher, Johannes; Weidenhagen, Rudolf; Mainz, Uber; Reinicke, Hans; Leonhauser, Senta; and Bauer, Ingeborg, 3,772,433.
Reis, Katharina Maria. Coin sorting and counting machines. 3,771,538, Cl. 133-3.00d.
Reliable Electric Company: *See—*
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Remington Arms Company, Inc.: *See—*
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Resag, Klaus: *See—*
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Respiratory Care, Inc.: *See—*
van Amerongen, Edward, 3,771,721.
Revuelta, Antonio Lozano. Chain system for the selection and separation of objects. 3,771,648, Cl. 209-74.00r.
Rex, Don P.: *See—*
Bruckner, Ronald L.; and Rex, Don P., 3,772,533.
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Reynolds Products, Inc.: *See—*
Neumann, Charles G.; Krueger, Harvey R.; and Panock, Walter, 3,771,907.
Reznick, Stephen B., to Emerson Electric Co. Ultrasonically cleaned electrode and flowmeter using it. 3,771,361, Cl. 73-194.03m.
Rheinstahl Aktiengesellschaft: *See—*
Bornemann, Jaochim, 3,771,594.
Rhodes, William A. Apparatus for measuring electrostatic fields. 3,772,592, Cl. 324-32.000.
Rhodes, William H.; and Webb, Raymond J., Jr., to Chemetron Corporation. Method for reducing oil absorption of pigment containing beta-copper phthalocyanine and composite green pigment. 3,772,048, Cl. 106-288.00q.
Rhone-Poulenc S.A.: *See—*
Brunie, Jean-Claude; Costantini, Michel; Crenne, Noel; and Jouffret, Michel, 3,772,375.
Riccitiello, Salvatore R.: *See—*
Parker, John A.; and Riccitiello, Salvatore R., 3,772,220.
Richards, Brynley Thomas; and Battman, Bernard Desmond, to Metcalfe, C. B., Food Machinery, Ltd. Slicing machine. 3,771,404, Cl. 83-713.000.
Richards, Lee Wise, to Bell Telephone Laboratories, Incorporated. Telephone dial pulse detection circuit. 3,772,477, Cl. 179-16.0ea.
Richards of Rockford: *See—*
Rose, Clark B.; Kelley, Richard B.; and Ravitts, Richard B., 3,771,724.
Richards, Raymond Keith, to Autobars-Vendabeka Limited. Boxes or packs for packaging eggs, fruit or other articles. 3,771,712, Cl. 229-2.500.
Richeson, William E., Jr.; and Roach, Joel K., to Magnavox Company, The. Fax carrier detector. 3,772,456, Cl. 178-88.000.
Rickey, James C. Music teaching device with a color coordinated fingerboard region and color correlated fingerboard region and color correlated fingerboard and notation regions. 3,771,409, Cl. 84-471.000.
Ricoh Co., Ltd.: *See—*
Murakami, Takashi, 3,771,444.
Tubuko, Kazuo; Kurotori, Tuneo; and Tashiro, Isao, 3,772,281.
Riddle, Dennis L.: *See—*
Eschenbach, Paul W.; King, Jerry N.; and Riddle, Dennis L., 3,771,953.
Riedel, Wolfgang, to Bosch, Robert, G.m.b.H. Film guide means for cinematographic apparatus. 3,771,704, Cl. 226-89.000.
Rieger, Martin M., to Warner-Lambert Company. Aluminum alcoholates of N-acetyl-p-aminophenol. 3,772,352, Cl. 260-448.0ad.
Rieli, Anthony. Amphibious all-terrain vehicle. 3,771,615, Cl. 180-6.480.
Riggs & Lombard, Inc.: *See—*
Holm, William J., 3,771,952.
Ring, Howard D., to Xerox Corporation. Printing apparatus. 3,771,184, Cl. 101-1.000.
Risdon Manufacturing Company, The: *See—*
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Rist, Donald H.; and Schneider, Joseph D., to General Electric Company. Electronic power control and load rate circuit. 3,771,821, Cl. 290-14.000.
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Rittiger, Robert S.; and Russell, Charles K., to United States Steel Corporation. Oxygen sensors. 3,772,177, Cl. 204-195.00s.
Ritzenhoff, Hermann, to Gebruder Seidel KG, Metallwarenfabrik. Metal tear-off cap. 3,771,684, Cl. 215-46.00a.
RKL Controls, Inc.: *See—*
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Roark, Glenn L. Multiple torque tube system for variable view mirrors. 3,771,854, Cl. 350-304.000.
Robba, Max Fernand; Marcy, Rene Henri Pierre; and Duval, Denise Jeanne Claude, to Innothera. Quinazoline derivatives. 3,772,295, Cl. 260-256.50r.
Robbins & Myers, Inc.: *See—*
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Roberts, Elwyn: *See—*
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Roberts, Paul C., to United States of America, Navy. Fluid velocity indicator. 3,771,362, Cl. 73-229.000.
Roberts, Richard E.; Harmon, George Lamar; Colpack, Michael J.; and Askowith, Burton J., to Martin Marietta Corporation. Magnifier scanner tracker. 3,772,516, Cl. 250-201.000.
Roberts, Richard W., to Borg-Warner Corporation. Automotive air conditioning apparatus. 3,771,318, Cl. 62-227.000.
Robertshaw Controls Company: *See—*
Keller, Anthony T., 3,771,210.
Lewis, Jay L., 3,771,387.
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Robic, Gabriel, to Elf Union S.A. Fuel burner. 3,771,727, Cl. 239-417.300.
Robins, A. H., Company, Incorporated: *See—*
Lerner, Irwin S., 3,771,520.
Roblin Industries, Inc.: *See—*
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Rock-Ola Manufacturing Corporation: *See—*
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Rockola, David C., to Rock-Ola Manufacturing Corporation. Depleted stake replacement apparatus for cup dispenser. 3,771,691, Cl. 221-11.000.
Rockwell International Corporation: *See—*
Cumming, James C., 3,772,549.
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Roeser, John O. Dual acting push button toggle switch. 3,772,484, Cl. 200-4.000.
Rogers, Chester A.; and Hetzel, George F. Self-contained drain valve. 3,771,177, Cl. 4-287.000.
Rohde, Robert P.; and Weisgerber, Thomas W., to General Motors Corporation. Reactor air pump drive system. 3,771,921, Cl. 417-12.000.
Rohm & Haas Company: *See—*
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Rolph, Edwin J. Display device. 3,771,243, Cl. 40-129.00c.
Romans, Gleason, to Aviation, Inc. Pipeline leak detector. 3,771,350, Cl. 73-40.50r.
Romrell, Glyn K., to E-Systems, Incorporated. Radio navigation pulse pair detector. 3,772,699, Cl. 343-17.100.
Ronlan, Alvin: *See—*
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Ronning, Richard L., to Ronning Engineering Co., Inc. Negative pressure feeder-separator in closed loop product grind and discharging system. 3,771,294, Cl. 55-345.000.
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Root, Lloyd W., Jr., to United States of America, Army. Radar target discrimination method and apparatus. 3,772,689, Cl. 343-5.0sa.
Rose, Clark B.; Kelley, Richard B.; and Ravitts, Richard B., to Richards of Rockford. Apparatus and process for spraying liquids. 3,771,724, Cl. 239-221.000.
Rose, William W., Jr.; and Hutto, Walter D., Jr., to General Electric Company. Gas turbine engine emergency speed control system. 3,771,314, Cl. 60-223.000.
Rosemount Inc.: *See—*
Brogden, Morris H.; and Geronime, Robert L., 3,772,492.
Rosen, Sidney. Apparatus and process for pumping gluey material. 3,771,908, Cl. 417-446.000.

Rosencranz, Robert, to Sargent-Welch Scientific Company. Densitometer incorporating optical attenuator with direct readout of optical density. 3,771,877, Cl. 356-186.000.

Rosenfeld, Jerold C.: *See—*
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Ross, Donald R., Jr. Multiple trolley conductor unit. 3,772,482, Cl. 191-23.000.

Ross, Gerald F., to Sperry Rand Corporation. Base-band pulse object sensor system. 3,772,697, Cl. 343-13.00r.

Ross, Victor H.: *See—*
Skoli, Sigmund P.; Mojonnier, Harry G.; Witt, Chester J.; Seyfarth, Walter A.; and Ross, Victor H., 3,771,289.

Rosser, Robert W., to United States of America, National Aeronautics and Space Administration. Polyimide foam for thermal insulation and fire protection. 3,772,216, Cl. 260-2.5am.

Rossigno, Louis P.; and Gatt, Michael E., to Bendix Corporation, The. Synchronized braking system for a tow vehicle trailer. 3,771,838, Cl. 303-7.000.

Rotax, Limited: *See—*
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Roth, Barbara, to Burroughs Wellcome Co. Alkyl substituted benzyl pyrimidines. 3,772,289, Cl. 260-256.40n.

Roth, Harold H., to Dow Chemical Company, The. Method of sizing paper with a sulfonium resin copolymer. 3,772,143, Cl. 162-169.000.

Roth, James F.: *See—*
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Roth, Shirley H., to Cities Service Company. Process for protecting a substrate with an arylsulfonamidothiadiazole or oxadiazole intumescent agent. 3,772,074, Cl. 117-136.000.

Rousseau, Marcel-Gustave; and Berthoumieux, Robert, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation and Commissariat a l'Energie Atomique. Vertical turbomolecular pumps. 3,771,909, Cl. 417-424.000.

Roussel-UCLAF: *See—*
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Rousselie, Claude Joseph; and Lacharlotte, Charlotte, Pierre, to S.I.C.A. "POMANJOU". Device for counting floating products. 3,771,652, Cl. 209-122.000.

Rowland, Leroy J. Mold for forming a metal cored elastomeric roll. 3,771,933, Cl. 425-113.000.

Rubenstein, Robert Aron: *See—*
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Rucker Company, The: *See—*
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Rudie, Peter S. Anastomosis clamp. 3,771,526, Cl. 128-334.00c.

Rudolph, Werner: *See—*
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Rudy, George J.: *See—*
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Ruf, Max, to Audi Nsu Auto Union Aktiengesellschaft and Wankel GmbH. Rotor for rotary-piston mechanism. 3,771,904, Cl. 418-61.000.

Ruffining, Charles R.: *See—*
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Ruisi, Joseph L. C. Surgical drainage tube. 3,771,527, Cl. 128-350.00r.

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Rushton, Brian M.; Rosenfeld, Jerold C.; and Hindersinn, Raymond R., to Hooker Chemical Corporation. preparation of polyhalogenated polyesters from polyhalocyclopentadienes carboxylic compounds and polyols or polyol forming materials. 3,772,406, Cl. 260-86.000.

Russell, Charles K.: *See—*
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Russell Finex Limited: *See—*
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Russell, Leroy E., to Von Weise Gear Co. Bobbin. 3,772,626, Cl. 336-192.000.

Russell, Milton E.: *See—*
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Russell, Robert O.: *See—*
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Russo, John J., to Perkins-Elmer Corporation, The. Interferometer having D.C. level compensation. 3,771,875, Cl. 356-106.000.

Rustad, Norman E.: *See—*
Hostettler, Fritz; Huffman, George W.; and Rustad, Norman E., 3,772,221.

Ryan, Frederick M.; and Miller, Robert C., to Westinghouse Electric Corporation. Phosphor combination and method, particularly adapted for use with explosives, for providing a distinctive information label. 3,772,099, Cl. 149-18.000.

Ryczek, William G., to Allis-Chalmers Corporation. Tilting grain bin unloader. 3,771,676, Cl. 214-83.260.

Saber Management Systems, Inc.: *See—*
Guthrie, David E.; and Swain, Arthur D., 3,772,501.

Sachs, Thomas D. Ultrasonic inspection and diagnosis system. 3,771,355, Cl. 73-67.50r.

Sacks, Lawrence E.; and Menefee, Emory, to United States of America, Agriculture. Method and apparatus for detecting spoilage. 3,771,351, Cl. 73-52.000.

Sadjian, Harry, to United States of America, Air Force. Pyrometer using a passive line shape spectral filter. 3,771,874, Cl. 356-43.000.

Safranek, William H.: *See—*
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Sagami Chemical Research Center: *See—*
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Sager, Richard K.: *See—*
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Saiko, Alphons: *See—*
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Sailors, Clyde A.: *See—*
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Saint-Gobain Industries: *See—*
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Saito, Masao; and Okawa, Takashi, to Mitsubishi Gas-Chemical Company, Inc. Process for preparing fluidized bed catalyst for production of aromatic nitriles. 3,772,212, Cl. 252-432.000.

Saito, Tsuyoshi: *See—*
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Sakamoto, Hitoshi: *See—*
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Sakata, Toshibumi; Yamato, Noboru; Fujimura, Fumio; and Fukawa, Tadasu, to Jujo Paper Co., Ltd. Electrical recording medium and process for recording thereon. 3,772,159, Cl. 204-2.000.

Sakuma, Yuuko. Apparatus for cutting and core-stripping an electric cord. 3,771,222, Cl. 30-90.100.

Sampson, Donald Frederick: *See—*
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Samvaz S.A.: *See—*
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Sanchez, Elias. Fertility calculators. 3,771,716, Cl. 235-85.0fc.

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Saponaro, Joseph P. Conveyorized electrical contact systems. 3,772,481, Cl. 191-6.000.

Sarett, Lewis H.; and Hannah, John, to Merck & Co., Inc. 5-Aryl and heterroarylphenyl sulfonic acids to treat inflammation. 3,772,444, Cl. 424-311.000.

Sargent-Welch Scientific Company: *See—*
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Sarlo, Lorenz M., to United States of America, Army. Electronic memory having a page swapping capability. 3,772,658, Cl. 340-173.00r.

Sarno, Kante H., to Shell Oil Company. Butadiene recovery process. 3,772,158, Cl. 203-53.000.

Sartorio, Franco, to D.E.A. Digital Electronic Automation S.p.A. Device for positioning a working member relatively to a holder and workpiece. 3,771,230, Cl. 33-185.00p.

Saskatchewan Power Corporation: *See—*
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Sasse, Klaus: *See*—
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Sato, Kazuo; and Hisatsune, Tomio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of protecting passengers in a moving vehicle upon collision thereof. 3,772,694, Cl. 343-7.0ed.

Sato, Masanari: *See*—
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Sato, Yoshimasa, to Ikegai Tekko Kabushiki Kaisha. Device for cutting and welding plastic band for use in automatic strapping machine. 3,771,436, Cl. 100-33.0pb.

Satoru, Enomoto; Fujioka, Mikio; Noguro, Masao; Wada, Hisayuki; and Saito, Tsuyoshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Thermosetting resin composition. 3,772,231, Cl. 260-28.000.

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Savageau, Robert George; and Whyzmuzis, Paul John, to Inmont Corporation. Novel quick setting inks. 3,772,171, Cl. 204-159.190.

Sawle, William S. Reversible window assembly for a permanently closed window opening. 3,771,264, Cl. 49-390.000.

Sayers, James A., to Owens-Illinois, Inc. Matrix and method of making same. 3,771,592, Cl. 165-10.000.

Scantlin Electronics, Inc.: *See*—
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Scantlin, John R., to Scantlin Electronics, Inc. Push button keyboard with oscillator keying. 3,772,684, Cl. 340-365.001.

Scapes, John N., to Imperial-Eastman Corporation. Self-lapping seal structure. 3,771,765, Cl. 251-310.000.

Scarso, Luciano; Cerri, Egidio; and Pezzin, Giovanni, to Montecatini Edison S.p.A. Thermoplastic compositions based on highly crystalline vinyl chloride polymers. 3,772,409, Cl. 260-876.00r.

Schaaf, Richard: *See*—
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Schaefer, Otto W. Wire measuring and cutting apparatus. 3,771,400, Cl. 83-356.000.

Schaer, Glenn R.; and Safranek, William H., to Battelle Development Corporation. Coated article. 3,771,972, Cl. 29-196.600.

Schaffron, Helmut T. Apparatus and method for forming rectangular bottom plastic bag machine. 3,772,116, Cl. 156-221.000.

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Schatte, Kurt, to Z-Loda Corporation. Platform assembly for a multiple chain pair transport device. 3,771,642, Cl. 198-154.000.

Scheer, David W., to Honeywell Inc. Processing analog trace display. 3,772,679, Cl. 340-347.0ad.

Scheffer, Harry, to Kruger, Hr.ry, GmbH. Thrust piston motors. 3,771,421, Cl. 91-277.000.

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Schimkai, Harald, to Volkswagenwerk Aktiengesellschaft. Steering arrangement for vehicles with a steering servo mechanism. 3,771,619, Cl. 180-79.000.

Schindele, Alfred; Engelfried, Werner; and Glaunsinger, Heinz. Jack-controlling means for the needles of a circular knitting machine. 3,771,328, Cl. 66-50.00r.

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Schlang, Arthur, to Isotec Incorporated. Electro-optical character reader. 3,772,648, Cl. 340-146.30j.

Schlapfer, Hans; and Kabas, Guglielmo, to Ciba-Geigy Corporation. 2-Benzimidazol (2)-benzofurans as optical brighteners. 3,772,323, Cl. 260-309.200.

Schlichting, John, to Babcock & Wilcox Company, The. Industrial technique. 3,771,596, Cl. 165-158.000.

Schlickeiser, Klaus. Incremental tape drive with optically derived control pulses. 3,772,664, Cl. 340-174.10a.

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Schlorke, Arno Willi. Warning device for motor vehicles. 3,772,642, Cl. 340-52.00f.

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Schmitt, Helwig. Combines. 3,771,298, Cl. 56-14.600.

Schmitt, Thomas H., to Industrial Research Products, Inc. Backplate construction for electret transducer. 3,772,133, Cl. 161-112.000.

Schnabel, Ernest. Joint of two mutually braces metal parts covered with plastic material. 3,771,817, Cl. 285-55.000.

Schnabelle, Werner; Zeyher, Fritz; and Weis, Dieter, to Messerchmitt-Bolkow-Blohm GmbH. Recoilless and detonation-free projectile firing device. 3,771,417, Cl. 89-1.701.

Schnarr, Raymond H., to Schlage Lock Co. Electrically controlled hold-open device. 3,771,823, Cl. 292-270.000.

Schneider, August: *See*—
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Schneider, Hans; Hussner, Richard Gustav; and Fischer, Raimund Erhard, to Deutsche Texaco Aktiengesellschaft. Method and apparatus for preventing coke obstructions in pyrolysis plants. 3,771,638, Cl. 196-98.000.

Schneider, Hans-Dieter, to Fernseh G.m.b.H. Method and apparatus for detecting achromatic portions in a color television image. 3,772,462, Cl. 178-5.4bt.

Schneider, Henry J.: *See*—
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Schoening, Peter K. Method for producing non-metallic beam structures. 3,772,419, Cl. 264-112.000.

Schoke, James A. Electrode mounts for cold cathode lamps. 3,772,559, Cl. 313-269.000.

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Schole, Murray L. Method and device for mechanical cleaning of teeth. 3,771,537, Cl. 132-93.000.

Scholle Corporation: *See*—
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Schweimler, Otto; and Sauter, Bernd, to Industrie-Werke Karlsruhe Aktiengesellschaft. Sabot projectile. 3,771,458, Cl. 102-93.000.
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Scott, George H. Exhaust gas purifier. 3,771,315, Cl. 60-297.000.
Scott, John Troye; and Taylor, Roger Tuson, to Imperial Chemical Industries Limited. Insecticide-treated bags. 3,771,254, Cl. 43-131.000.
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Sekulich, Stephen A.; and Hatch, Frederick R., to Mather Company, The. Multi-element fluctuating pressure seal. 3,771,799, Cl. 277-65.000.
Seragnoli, Ariosto, to G.D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Seragnoli. Feed rate control device of cigarette packaging machine. 3,771,279, Cl. 53-56.000.
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Simons, Edward Widman; and Simons, Edward Warren, to Dualjet Corporation. Refrigerated reach-in display compartment. 3,771,323, Cl. 62-89.000.
Simpson, Fred E.: *See*—
Clasper, Thomas; Hutton, Wilfred H.; Kessinger, Orville E., Jr.; Randour, Victor; and Simpson, Fred E., 3,771,843.
Sinclair, Walter, to Rotax, Limited. Thyristor firing circuit. 3,772,530, Cl. 307-252.00j.
Singer Company, The: *See*—
Albert, William C., 3,771,371.
Bose, Norman J.; and Sani, Hamid H., 3,772,675.
Singer Company, The, mesne: *See*—
Albert, William C., 3,771,368.
Singh, Balwant; and Ullman, Edwin Fisher, to American Cyanamid Company. Azirine Compounds. 3,772,284, Cl. 260-239.00a.
Singleton, Thomas C.: *See*—
Johnson, William R.; and Singleton, Thomas C., 3,772,156.
Sipovic, Steve F.; and Steinkraus, Herman A., to Motor Wheel Corporation. Adjustable tread wheel. 3,771,832, Cl. 301-9.0tv.
SKF Industrial Trading and Development Company: *See*—
Hallerback, Stig Lennart, 3,772,542.
Skil Corporation: *See*—
Meyer, Dieter B., 3,771,895.
Skingle, Gerald David, to Post Office, The. Frequency synthesiser. 3,772,681, Cl. 340-347.0da.
Skinner Precision Industries, Inc.: *See*—
Padula, Lawrence Dominic, 3,771,565.
Skoli, Sigmund P.; Mojonnier, Harry G.; Witt, Chester J.; Seyfarth, Walter A.; and Ross, Victor H. Collection device for dryer exhaust gases. 3,771,289, Cl. 55-222.000.
Skoyles, Derek Robert, to U.S. Philips Corporation. Anti-lock brake systems. 3,771,841, Cl. 303-21.0af.
Slaasted, Raymond S., to Modine Manufacturing Company. Heat exchange device. 3,771,595, Cl. 165-151.000.
Slifer Manufacturing Company, Incorporated: *See*—
Conlee, George D., 3,771,912.
Slobodnik, Andrew J., Jr., to United States of America, Air Force. Low velocity zero temperature coefficient acoustic surface wave delay line. 3,772,618, Cl. 333-30.00r.
Small, Norman J. H.; and Edhouse, Christopher J., to Shell Oil Company. Oil compositions. 3,772,169, Cl. 252-56.00r.
Smerd, Peter G.: *See*—
Bratton, Raymond J.; Roberts, Elwyn; and Smerd, Peter G., 3,772,147.
Smialowicz, Edward H., to Garrett Corporation, The. Emergency aircraft evacuation apparatus and method. 3,771,749, Cl. 244-137.00p.
Smidth, F. L., & Co.: *See*—
Schmidth, Claus A., 3,771,643.
Smit, Johny Abram; and Kneefel, Wim Bernard Samuel Maria, to Haygens, Christiaan, Laboratorium N.V. Secondary radar system. 3,772,688, Cl. 343-6.51c.
Smith, Berny L., to Transcinor Incorporated. Tying machine. 3,771,257, Cl. 47-1.000.
Smith, Cornelius W. Demountable solid tire wheel assembly. 3,771,833, Cl. 301-11.00r.
Smith, David A. Detailed photometer. 3,772,517, Cl. 250-209.000.
Smith, Donald A.: *See*—
Kantorski, Joseph W.; La Barre, David A.; and Smith, Donald A., 3,771,852.
Smith, Donald Tolman: *See*—
Frey, Dean Rudisill; Henn, Robert Walter; Smith, Donald Tolman; and Vedejs, Arthur Guntis, 3,772,635.
Smith, Edward A., to Eastman Kodak Company. Persulfate bleach-fix solution. 3,772,020, Cl. 96-60.0bf.
Smith, Edwin W.; and Flynn, Gordon L., to Upjohn Company, The. High surface area to compartmental volume diffusion and dialysis cell. 3,771,663, Cl. 210-321.000.
Smith, Elmer R. Protective apparatus for door locks employing latch-rods. 3,771,339, Cl. 70-118.000.
Smith Kline Corporation: *See*—
Hoover, John R. E., 3,772,286.
Smith, Leward N., to Morbark Industries, Inc. Slab guide for vertically adjustable sawing apparatus. 3,771,397, Cl. 83-102.100.
Smith, Peter William, to Bell Telephone Laboratories, Incorporated. Waveguide gas laser devices. 3,772,611, Cl. 331-94.500.
Smith, Verity C., to Vaponics Incorporated. Cartridge holder. 3,771,660, Cl. 210-232.000.
Smith, Vigo N.: *See*—
Winterhalter, David R.; and Smith, Vigo N., 3,771,962.
Smith, William Irving, to RCA Corporation. Dual channel balanced line type modulator. 3,772,601, Cl. 328-65.000.
Smith, William Irving, to RCA Corporation. Balanced line type pulser circuit. 3,772,613, Cl. 332-12.000.
Smith, Willis R.: *See*—
Auer, John H., Jr.; Anderson, Robert F.; Kovalcik, Vincent P.; Marsh, Donald D.; Silley, Henry C.; and Smith, Willis R., 3,772,640.
Smithkline Corporation: *See*—
Pfliffer, Francis R.; and Weisbach, Jerry A., 3,772,360.
Sutton, Blaine M., 3,772,341.
Smoot, Charles H.; and Kleven, Lowell A., to Uniflo Systems Company. Control systems for vehicles operating on a track. 3,771,463, Cl. 104-155.000.
SMW-Spanneinrichtungen Schneider & Weisshaupt: *See*—
Hiestand, Karl, 3,771,803.
Snam Progetti, S.p.A.: *See*—
Clementi, Anacleto, 3,772,262.
Gambini, Arnaldo, 3,771,357.
Snodgrass, Hugh E.: *See*—
Lauchlan, Robert L.; and Snodgrass, Hugh E., 3,772,408.
Snyder, Robert M., to United States of America, Navy. Sonobuoy mooring unit. 3,772,639, Cl. 340-2.000.
Snyder, Thomas P.: *See*—
Tarnopol, Milton S.; and Snyder, Thomas P., 3,772,075.
Societa Italiana Resine S.I.R. S.p.A.: *See*—
Paleologo, Teo; and Ackermann, Jacob, 3,772,392.
Societe Alsacienne de Constructions Atomique de Telecommunications et d'Electronique "Alcatel": *See*—
Friberg, Jean-Marie Eugene; and Merigoux, Jean-Marie, 3,771,925.
Societe Anonyme D.B.A.: *See*—
Furia, Andre, 3,772,698.
Societe Anonyme dite: Gustin Fils Deville: *See*—
Jourdan, Michel L. M., 3,771,300.
Societe Anonyme dite: Societe National des Petroles d'Aquitaine: *See*—
Chambu, Claude; and Collo, Jean-Paul, 3,771,879.
Societe Anonyme: Poclain, Le Plessis-Belleville: *See*—
Leyrat, Pierre J., 3,771,610.
Societe Nationale des Petroles d'Aquitaine: *See*—
Lang, Andre, 3,772,358.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation and Commissariat a l'Energie Atomique: *See*—
Rousseau, Marcel-Gustave; and Berthoumieux, Robert, 3,771,909.
Sohnchen, Ernst, to Vaillant, Joh., KG. Rotary valve and piezo-electric firing unit. 3,771,942, Cl. 431-255.000.
Soini, Erkki Juhani, to Wallac OY. Apparatus for spectral analysis and counting of pulses generated from radio active disintegrations in a radiation detector. 3,772,515, Cl. 250-366.000.
Solar, Carl M.: *See*—
Haselwood, Donald E.; and Solar, Carl M., 3,772,649.
Solartron Electronic Group, Limited, The: *See*—
Dorey, Howard Anthony, 3,772,683.
Martin, Edward Albert, 3,772,582.
Soloway, Samuel B.: *See*—
Pilgram, Kurt H.; Medema, Dirk; Soloway, Samuel B.; and Gaertner, George W., Jr., 3,772,391.
Sommer, Ruediger, to Hell, Rudolf, Dr.-Ing. Method and arrangement for the modified recordation of sign configurations. 3,772,677, Cl. 340-324.00a.
Song, John, to American Cyanamid Company. Hindered phenol sulfides. 3,772,390, Cl. 260-609.00f.
Sonoda, George: *See*—
Luckett, Gary C.; and Sonoda, George, 3,772,607.
Sontag, Kenneth E.: *See*—

Gray, James G.; and Sontag, Kenneth E., 3,771,278.

Sony Corporation: *See—*
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Kubota, Yasuharu, 3,772,552.
Nakajima, Kazuhiko, 3,772,459.
Sahara, Hiroshi; Nagai, Tamiji; and Yamada, Hisafumi, 3,772,583.
Yamano, Yuzo, 3,771,358.

Soons, Cornelius, to Acheson Industries, Inc. Fluorocarbon moisture curing polyurethane polyvinyl butyral-dispersion composition for low friction coatings. 3,772,236, Cl. 260-29.60f.

Sorenson, Charles E.; Stubblefield, Clyde D.; De Baillie, Arnold A.; Bramley, Robert K.; and Bourassa, Hugh A., to Hahn, Inc. Turf maintenance machine. 3,771,296, Cl. 56-7.000.

Sorvall, Ivan, Inc.: *See—*
Blum, Josef, 3,771,405.

Southern California Gas Co.: *See—*
Teague, Walter D., Jr., 3,771,945.

Southwest Products Co.: *See—*
Hackman, Kenneth V., 3,771,384.

Spademan, Charles F.: *See—*
Marsalka, Joseph P.; and Spademan, Charles F., 3,772,657.

Spain, Levern. Process for exterminating rodents. 3,771,253, Cl. 43-124.000.

Spalvins, Talivaldis, to United States of America, National Aeronautics and Space Administration. Deposition of alloy films. 3,772,174, Cl. 204-192.000.

Specht, Walter A. Trailer leveling system. 3,771,232, Cl. 33-375.000.

Spectrotherm Corporation: *See—*
Chan, Kingsley; and Buck, Willard E., 3,772,464.

Speedine Partnership: *See—*
King, Leonard Tony, 3,771,433.

Sperry Rand Corporation: *See—*
Binkley, Carl R., 3,771,555.
Braddon, Frederick D., 3,772,692.
Nations, Carl T., 3,772,690.
Ross, Gerald F., 3,772,697.

Speyer, Henning J., to Sears, Roebuck and Co. Weight usable in a barbell assembly. 3,771,785, Cl. 272-84.000.

Spieldiener, Reinhold: *See—*
Hinterholzer, Hans; Saiko, Alphons; Spieldiener, Reinhold; and Spieldiener, Robert, 3,771,806.

Spieldiener, Robert: *See—*
Hinterholzer, Hans; Saiko, Alphons; Spieldiener, Reinhold; and Spieldiener, Robert, 3,771,806.

Spietschka, Ernst; Landler, Josef; and Wager, Dieter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Cisnaphthoylene-bis-benzimidazole pigment and process for its manufacture. 3,772,303, Cl. 260-282.000.

Spietschka, Ernst; Hohn, Jurgen; and Troster, Helmut, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Benzoxanthene and benzothioxanthene dyestuffs. 3,772,333, Cl. 260-327.000.

Spotnils, Inc.: *See—*
Perkins, Garry R.; and Mitschelen, Laurel I., 3,771,710.

Sprague, Theodore S.; Schlicting, John; and McDonald, Bertrand N., to Babcock & Wilcox Company, The. Vapor generator control. 3,771,497, Cl. 122-32.000.

Sproull, Reavis C.: *See—*
Kusterer, James E., Jr.; and Sproull, Reavis C., 3,771,958.

Squire, Elaine Josephine: *See—*
Ficken, Geoffrey Ernest; and Squire, Elaine Josephine, 3,772,033.

Squires, Richard F.: *See—*
Hernestam, Sven E. H.; and Squires, Richard F., 3,772,275.

St. Clair, David J.; and Evans, Donald D., to Shell Oil Company. Lubricating compositions. 3,772,196, Cl. 252-32.0fe.

St. Denis, Andrew R. Hydraulic rotary strip stock feeder. 3,771,703, Cl. 226-42.000.

Stachel, Ingerburg Lydia Katharina: *See—*
Beyerle, Rudi; Stachel, Ingerburg Lydia Katharina; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, 3,772,280.

Stadler, Paul; and Stutz, Peter, to Sandox Ltd.; a/k/a Sandoz AG. p'-Alkoxy-ergotamines. 3,772,299, Cl. 260-268.0pe.

Staeuble, Max: *See—*
Ulrich, Paul; Staeuble, Max; Kugler, Fritz; and Jost, Max, 3,772,296.

Stalnaker, Robert M. Apparatus for releasing chemicals clearing and cleaning waste pipes. 3,771,968, Cl. 23-267.00d.

Stamberger, Paul, to Union Optics Corporation. Copolymers and hydrogels of unsaturated heterocyclic compounds. 3,772,235, Cl. 260-29.6hn.

Stamy, David R. Fishing lure. 3,771,251, Cl. 43-42.320.

Stanadyne, Inc.: *See—*
Davis, Charles W., 3,771,506.

Standard Oil Company: *See—*
Bertolacini, Ralph J.; and Kim, Dae K., 3,772,183.
Bertolacini, Ralph J.; and Kim, Dae K., 3,772,184.

Standard Oil Company (Indiana): *See—*
Lee, Richard J., 3,772,373.

Standard Precision, Inc.: *See—*
Barber, Lloyd L., 3,771,849.

Standard Tool & Manufacturing Co.: *See—*
Doocey, Robert J., 3,771,780.

Standke, Gerhard, to Runtal Holding Company S.S. Glarus. Valve actuator. 3,771,761, Cl. 251-134.000.

Standum, Inc.: *See—*
Paramonoff, Elpidifor, 3,771,345.

Stapler, W. Mead. Turbine-type flow responsive device. 3,771,363, Cl. 73-231.00r.

Stapper, Christian H.; and D'Andrea, Richard W., to Cincinnati Milacron Chemicals, Inc. Preparation of pyrroles by cyclization of azines. 3,772,328, Cl. 260-313.100.

Starr, Eugene W., to PPG Industries, Inc. High temperature apparatus for conditioning glass. 3,771,988, Cl. 65-337.000.

Static-S.p.A.: *See—*
Greissing, Hans, 3,771,518.

Stauffer Chemical Company: *See—*
Baker, Don R., 3,772,387.
Gutman, Arnold D.; and Baker, Don R., 3,771,995.
Pallos, Ferenc M.; and Tseng, Chien K., 3,772,365.
Teach, Eugene G., 3,772,334.

Stauffer Chemical Company, mesne: *See—*
Bruns, Carl Newton, 3,772,239.

Stauffer, Larry Ronald: *See—*
Paullus, Clarence Leonard; and Stauffer, Larry Ronald, 3,772,637.

Stein, Leon J. Fish line restrainer. 3,771,741, Cl. 242-84.20g.

Steinbach, Harry M.: *See—*
Gatto, Charles; and Steinbach, Harry M., 3,771,393.

Steindler, Umberto: *See—*
Serracchioli, Francesco; and Steindler, Umberto, 3,772,656.

Steinicke, Darrell B.: *See—*
McDermott, Clifton Eugene; and Steinicke, Darrell B., 3,771,717.

Steinkraus, Herman A.: *See—*
Sipovic, Steve F.; and Steinkraus, Herman A., 3,771,832.

Stendel, Wilhelm: *See—*
Enders, Edgar; and Stendel, Wilhelm, 3,772,330.
Zellerhoff, Knut; Schutz, Siegismund; and Stendel, Wilhelm, 3,772,320.

Stepanek, William D., to Texaco Inc. Continuous 2-methyl-1-alkene polymerization process. 3,772,401, Cl. 260-683.15b.

Stephenson, Earle W.; Newberry, James G.; and Hazzard, Robert C., to Kennametal Inc. and International Minerals & Chemical Corporation. Case mill having outwardly tapering flow path. 3,771,734, Cl. 241-187.000.

Sterling Drug Inc.: *See—*
Surrey, Alexander R., 3,772,370.

Stethem, Walter C., to Armstrong, S. A., Limited. Vortex de-aerator. 3,771,290, Cl. 55-205.000.

Stevens, J. P., & Co., Inc.: *See—*
Carman, Alexander J., 3,771,330.

Stevens, Laurence G.; Miller, Marilyn; and Goeller, Leonhard A., to Universal Oil Products Company. Hydrometallurgical recovery of metal values. 3,772,423, Cl. 423-144.000.

Stevens, Laurence G.; Miller, Marilyn; and Goeller, Leonhard A., to Universal Oil Products Company. Hydrometallurgical recovery of metal values. 3,772,424, Cl. 423-144.000.

Stevenson, Graham T.; and Johnston, Charles, to Dow Chemical Company, The. Poultry cage floor and poultry cage. 3,771,495, Cl. 119-17.000.

Steward, Collins W.; and Pruitt, Ronnie M., to Dow Chemical Company, The. Highly resilient flexible polyurethane foams having improved tear strength. 3,772,222, Cl. 260-2.50a.

Stewart, John L.; and Bowser, George H., to PPG Industries, Inc. Multiple-glazed breather windows. 3,771,276, Cl. 52-172.000.

Stewart, William Robert: *See—*
Canavan, John Andrew; and Stewart, William Robert, 3,772,451.

Stiles, S. Robert, to Pullman Incorporated. Lautering process. 3,772,036, Cl. 426-417.000.

Still, Carl, Firma: *See—*
Knappstein, Johannes; Fritzsche, Helmut; and Stratmann, Josef, 3,772,155.

Stock, Rene: *See—*
Tassin de Montaigu, Rene Cesar Alexandre; and Stock, Rene, 3,771,923.

Stone, Bernard; and Knife, Dennis H., to Syncro-System Corporation. Picture film and sound film synchronizer. 3,771,860, Cl. 352-12.000.

Stone, David W.; and Hansen, Manfred A., to Harnischfeger Corporation. Control means for high speed hoist. 3,772,579, Cl. 318-203.00r.

Stonner, Alfred; Schneider, August; and Konig, Wolfgang. Apparatus for the measurement of dust content in a gas stream. 3,771,472, Cl. 110-101.00r.

Stora Kopparbergs Bergslags Aktiebolag: *See—*
Hellman, Per; and Josefsson, Erik Anders Ake, 3,771,929.

Stork Amsterdam N.V.: *See—*
Anselrode, Lodewijk, 3,772,054.

Stork-Amsterdam N.V.: *See—*
Anselrode, Lodewijk, 3,772,055.

Stotz, Erich, to Porsch, Dr.-Ing. H.c.f., K. G., Firma. Wheel suspension for individually suspended vehicle wheels. 3,771,813, Cl. 280-124.00a.

Stournas, Stamoulis: *See—*
Heiba, El-Ahmadi I.; and Stournas, Stamoulis, 3,771,979.

Stover, Harris A., to Collins Radio Company. Code transmission system. 3,772,597, Cl. 325-38.00r.

Stowasser, William P.; and Miller, Keith A., to Air Products and Chemicals, Inc. Water cooling method and apparatus. 3,771,718, Cl. 239-133.000.

Straka, Emil R., to Varian Associates. Method for fabrication of precision miniature glass circuits. 3,771,983, Cl. 65-31.000.

Straley, James M.: *See—*
Giles, Ralph R.; and Straley, James M., 3,772,268.
Weaver, Max A.; Wallace, David J.; and Straley, James M., 3,772,362.

Stranahan, John J.; and Hollier, John C. L., to Texaco Inc. Smokeless gas flare with specific gravity gas analyzer for reducing noise. 3,771,940, Cl. 431-4.000.

Strantz, Chester L.: *See—*
Allen, Thomas E.; Johnson, Gordon W.; Sears, Richard L. M.; Strantz, Chester L.; and Waggoner, John B., 3,771,424.

Stratmann, Josef: *See—*
Knappstein, Johannes; Fritzsche, Helmut; and Stratmann, Josef, 3,772,155.

Straub, Donald H.: *See—*
Fischer, Robert P.; and Straub, Donald H., 3,771,931.

Strauss, Leopold, to Automated Machine Systems, Inc. Hydraulic pressure bottle testing method and machine. 3,771,649, Cl. 209-74.00r.

Strayer, James W. Helicopter rescue container. 3,771,750, Cl. 244-137.00p.

Stricklen, Clifford C., to Gleiur, Paul H. Ball bearing assembly. 3,771,845, Cl. 308-236.000.

Stringer, Robert Kenneth; McKinnon, Neil Alexander; and Williams, Lloyd Stuart. Molybdenum silicide bonded boron carbide. 3,772,042, Cl. 106-43.000.

Stubblefield, Clyde D.: *See—*
Sorenson, Charles E.; Stubblefield, Clyde D.; De Baillie, Arnold A.; Bramley, Robert K.; and Bourassa, Hugh A., 3,771,296.

Studer, Rolf: *See—*
Bayer, Ernst; Mutter, Manfred; Gillessen, Dieter; Kunzi, Hans; and Studer, Rolf, 3,772,264.

Stultz, James C.; Capellman, John J.; and Knavish, Leonard A., to PPG Industries, Inc. Continuously skimming viscous glass. 3,771,986, Cl. 65-134.000.

Sturm, Elmar; Cellarius, Hans-Joerg; Von Bredow, Brigitta; and Vogel, Christian, to Ciba-Geigy Corporation. Octahydropyrindenes. 3,772,312, Cl. 260-293.540.

Stutz, Peter: *See—*
Stadler, Paul; and Stutz, Peter, 3,772,299.

Suddeutsche, Zucher, mesne: *See—*
Bircher, Johannes; Weidenhagen, Rudolf; Mainz, Uber; Reinicke, Hans; Leonhauser, Senta; and Bauer, Ingeborg, 3,772,433.

Sugano, Hitoshi: *See—*
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Sugawara, Naoyuki; Yamada, Junji; Yamate, Takeshi; and Yoshikawa, Tadashi, 1/2 to Tokyo Shibaura Denki Kabushiki Kaisha, a/k/a (Tokyo Shibaura Electric Co., Ltd.) and Ishikawajima Harima Jyokogyo Kabushiki Kaisha, a/k/a (Ishikawajima Harima Heavy Industrie Co., Ltd.). Lubricant assembly for supplying lubricant to chain links. 3,771,623, Cl. 184-15.00a.

Sugihara, Yasumasa, to General Corporation, The. Color synchronizing system for a pal colour television. 3,772,460, Cl. 178-5.40p.

Sugita, Sadao: *See—*
Nakajima, Tomio; Sugita, Sadao; Kishida, Yukichi; Yoshimoto, Masasumi; and Ishida, Noboru, 3,772,023.

Sulser, Troy S.: *See—*
Horton, John P.; Kagan, Avihu; and Sulser, Troy S., 3,771,189.

Sumitomo Electric Industires, Ltd.: *See—*
Taketomi, Kameo; Katsumata, Tomoaki; Matsushima, Norihisa; and Yoneji, Masaari, 3,771,304.

Sun Oil Company (Delaware): *See—*
Hill, William L., 3,771,600.

Sun Research and Development Co.: *See—*
Hedge, John A., 3,772,399.

Sunderland, George E., to United Aircraft Corporation. Deaerating oil tank. 3,771,287, Cl. 55-182.000.

Sunderland, John C., to Capintec, Inc. Isolation amplifier. 3,772,514, Cl. 250-551.000.

Superior Concrete Accessories, Inc.: *See—*
Black, James A., 3,771,757.

Supitilov, Michael C., to Du Kane Corporation. Center bolt type acoustic transducer. 3,772,538, Cl. 310-9.100.

Surrey, Alexander R., to Sterling Drug Inc. N,N'-Bis(4-(4'-nitro- or amino)-phenoxy)benzyl,-N,N'-bridged-diamines. 3,772,370, Cl. 260-570.50p.

Susquehanna Corporation, The: *See—*
MacPherson, James R.; and Serbu, Paul W., 3,771,913.

Sutton, Blaine M., to Smithkline Corporation. Substituted 2,5-diphenyl-3,4,6-trihydroxy-2,4-hexadienoic acid lactones (1,4). 3,772,341, Cl. 260-343.600.

Suzuki, Yoshiko: *See—*
Hara, Morihisa; Suzuki, Yoshiko; Ohta, Hironori; and Uemura, Michihiko, 3,772,135.

Svensson, Stig Ake Gosta, to Alfa-Laval AB. Rotary pump. 3,771,901, Cl. 418-156.000.

Swain, Arthur D.: *See—*
Guthrie, David E.; and Swain, Arthur D., 3,772,501.

Swan, David W.; and Duffin, George F., to Minnesota Mining and Manufacturing Company. Azodicarbonamides as photographic bleaching agents. 3,772,018, Cl. 96-60.00r.

Swann, Clifford, to Arcata Graphics. Paster control target. 3,771,737, Cl. 242-58.100.

Swartz, William. Litter container for automobiles. 3,771,754, Cl. 248-311.000.

Sweeney, James S.; Dyers, George A., Sr.; and Johnson, Ronald G., to Rockwell International Corporation. Element position detector system. 3,771,325, Cl. 66-50.00r.

Sweet, Larrie H., to Carborundum Company, The. Adjustable anchor device for furnace walls. 3,771,467, Cl. 110-1.00a.

Swenson, Roy S., to Risdon Manufacturing Company, The. Two-piece propel-repel dispenser. 3,771,881, Cl. 401-75.000.

Swett, Alan M.: *See—*
Napoleone, Nunzio; and Swett, Alan M., 3,771,670.

SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH: *See—*
Hanselmann, Dieter; Bock, Willy; and Prohaska, Hans, 3,772,644.

Swindt, Joseph K., II, to VSI Corporation. Fastener. 3,771,410, Cl. 85-1.00r.

Swithenbank, Joshua; and Taylor, David Shaw, to Land Pyrometers, Limited. Detection of flames at burners. 3,772,670, Cl. 340-228.200.

Switlik Parachute Co., Inc.: *See—*
Moran, Harold J., 3,771,183.

Sybron Corporation: *See—*
Lackey, Ray R.; Henninger, Harold B.; and Schneider, Henry J., 3,771,781.

Symbroski, Alex P.: *See—*
Klink, Jerome P.; Symbroski, Alex P.; and Shape, Norman R., 3,771,324.

Symons Corporation: *See—*
Pipala, Dennis R., 3,771,756.

Syncro-System Corporation: *See—*
Stone, Bernard; and Knife, Dennis H., 3,771,860.

Syndent Corporation: *See—*
Lieb, Nathaniel H.; and Caley, Samuel Scott, 3,771,226.

Synergistic: *See—*
Halpern, Alfred; and Sasmor, Ernest J., 3,772,442.

Szente, Andre: *See—*
Hellerbach, Joseph; Szente, Andre; and Walser, Armin, 3,772,305.

Szeverenyi, Nikolaus A., to GTE Sylvania, Incorporated. Temperature compensated level sensor. 3,772,673, Cl. 340-244.00r.

Szpak, Anthony D., to Arnet, Inc., mesne. Record changer spindle. 3,771,796, Cl. 274-10.00s.

Szucs, Attila: *See—*
Boros, Andor; Helm, Laszlo; Marton, Zsolt; and Szucs, Attila, 3,771,569.

Tachikawa, Ryuji; Takagi, Hiromu; Kamioka, Toshiharu; Miyadera, Tetsuo; Fukunaga, Mitsunobu; and Kawano, Yoichi, to Sankyo Company Limited. Benzodiazepine derivatives and process for preparing the same. 3,772,371, Cl. 260-562.00n.

Taira, Toshio: *See—*
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Taiyo Yuden Kabushiki Kaisha: *See—*
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Takagi, Katsuyuki; and Kato, Tatsuo, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Sensor for a positive or negative acceleration responsive switch. 3,771,370, Cl. 73-517.00r.

Takashina, Toshiyuki: *See—*
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Taketomi, Kameo; Katsumata, Tomoaki; Matsushima, Norihisa; and Yoneji, Masaari, to Sumitomo Electric Industires, Ltd. Twisting machine and process for producing wire cords. 3,771,304, Cl. 57-58.570.

Takeuchi, Mamoru: *See—*
Nakamoto, Teruyuki; Shingo, Yoshioki; Takeuchi, Mamoru; and Ogawa, Masaru, 3,772,214.

Tamai, Yasuo; and Osawa, Sadao, to Fuji Photo Film Co., Ltd. Liquid developer used for electrophotography. 3,772,199, Cl. 252-62.100.

Tamura, Nobuhiro: *See—*
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Tanabe, Daisuke. Collapsible portable boat and its method of assembly. 3,771,180, Cl. 9-2.00r.

Tanayama, Shigeharu: *See—*
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Tansley, Henry William. Latching and release assembly for hydraulically retarded door closers. 3,771,195, Cl. 16-48.500.

Taplin, Lael B., to Bendix Corporation, The. Fluidic fuel injection system having transient engine condition responsive means to controllably effect the quantity of fuel injected. 3,771,505, Cl. 123-119.00r.

Tarnopol, Milton S.; and Snyder, Thomas P., to PPG Industries, Inc. Applying electroconductive heating circuits to glass. 3,772,075, Cl. 117-211.000.

Tarnow, Horst; Sasse, Klaus; and Homeyer, Bernhard. Methanesulfonic acid esters of 4-trifluoromethyl-phenols. 3,772,344, Cl. 260-456.00p.

Tashiro, Isao: *See*—
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Tassin de Montaigu, Rene Cesar Alexandre; and Stock, Rene. Autogyros, especially permitting the use of these devices as economical air-ground vehicles. 3,771,923, Cl. 416-143.000.

Tateisi, Hiromiti: *See*—
Hiramatu, Sadakazu; Egusa, Tomoyosi; and Tateisi, Hiromiti, 3,771,802.

Tatsuguchi, Kazoo, to Victor Company of Japan, Ltd. Capstan phase matching system in an electronic editing mode for magnetic recording and reproducing apparatus. 3,772,468, Cl. 179-100.20b.

Tayler, James L., Manufacturing Company: *See*—
Mortoly, John L., 3,771,779.

Taylor, David Shaw: *See*—
Swithenbank, Joshua; and Taylor, David Shaw, 3,772,670.

Taylor, James F.; and Golden, James E., to Reliable Electric Company. Machine for crimping connectors to wires and connector supply arrangement. 3,771,208, Cl. 29-203.00d.

Taylor, Melvin L. Process for the selective recover of chromium from chromium containing materials and solutions. 3,772,422, Cl. 423-56.000.

Taylor, Philip. Register pin for vacuum frame. 3,771,870, Cl. 335-91.000.

Taylor, Roger Tuson: *See*—
Scott, John Troye; and Taylor, Roger Tuson, 3,771,254.

Taylor-Hawkins, Peter Arthur, 1/2 to Pattersons Venture Limited. Loader. 3,771,678, Cl. 214-147.00g.

TDK Electronics Company, Limited: *See*—
Nishiyama, Yutaka, 3,772,615.

Teach, Eugene G., to Stauffer Chemical Company. Anilide dithiolanes and dithianes. 3,772,334, Cl. 260-327.00m.

Teague, Walter D., Jr., to Southern California Gas Co. Gas burner having a diffuser for mixing combustion air and gas. 3,771,945, Cl. 431-328.000.

Technicon Instruments Corporation: *See*—
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Tedeschi, Robert J.; and Natali, Paul W., to Air Products and Chemicals, Inc. Corrosion inhibitor containing the ethynylation reaction product of butyraldehyde with acetylene. 3,772,208, Cl. 252-396.000.

Teijin Limited: *See*—
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Teitel, Sidney: *See*—
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Temple, Michael D.: *See*—
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Temple, Sidney J., to Emerson Electric Co. Electric heating assembly. 3,772,498, Cl. 219-336.000.

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Tenneco Inc.: *See*—
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Tennis Services, Inc.: *See*—
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Terepin, Raymond H., to Scott Paper Company. Dual-use sanitary product systems. 3,771,883, Cl. 401-123.000.

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Thayer, William L.: *See*—
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Theander, Stig, to Allmanna Svenska Elektriska Aktiebolaget. Drive means for coil winding machines. 3,771,736, Cl. 242-7.130.

Theml, Horst, to Licentia Patent-Verwaltungs-G.m.b.H. Method for filling orders with a sorting conveyor. 3,771,679, Cl. 214-152.000.

Therwil, Juerg Merz, to Ciba-Geigy AG. Process for the manufacture of tertiary butylates. 3,772,355, Cl. 260-429.00r.

Thibault, Jacques P. Electrical heating envelopes. 3,772,500, Cl. 219-535.000.

Thibeault, Joseph G. Lace tightener. 3,771,699, Cl. 223-113.000.

Thomas, Gwylfa; and Jenkins, Brian William, to Imperial Chemical Industries Limited. Process for preparing yarn packages. 3,772,415, Cl. 264-234.000.

Thomas, John D., to Burroughs Corporation. Paper tape loading tool. 3,771,705, Cl. 226-92.000.

Thomas, Samuel C., Jr.: *See*—
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Thompson, Danny W., to Thompson Roofing Company, Inc. Seam forming machine. 3,771,482, Cl. 113-55.000.

Thompson Roofing Company, Inc.: *See*—
Thompson, Danny W., 3,771,482.

Thomson, Ely Knox; and Sailors, Clyde A., to Continental Carbon Company. Apparatus for printing bags. 3,771,448, Cl. 101-334.000.

Thordarson, Petur. Force sensing device with adjustable mechanical amplifier. 3,772,490, Cl. 200-153.00h.

Thorn, Werner. Method of digesting and further processing fresh sewage sludge or sopropel. 3,772,191, Cl. 210-44.000.

Thorp, James; and Jessen, Uwe, to Kolbus, August. Presser plate, conveyor mechanism and creasing iron arrangement for book pressing machine. 3,771,185, Cl. 11-1.0cp.

Thulin, Sigrard, to AGA Aktiebolag. Device for collection and measurement of liquid volumes. 3,771,366, Cl. 73-421.00b.

Thyssens, Guido Maria Josepha Benedikt, to International Standard Electric Corporation. Lock-out circuit. 3,772,651, Cl. 340-147.0cn.

Tieman, Jerome J.; Engeler, William E.; and Brown, Dale M., to General Electric Company. Method of transferring a desired pattern in silicon to a substrate layer. 3,772,102, Cl. 156-13.000.

Tischler, Steven L.; and Dowdell, James D., to Empire Brushes, Inc. Applicator. 3,771,190, Cl. 15-244.00r.

Titterington, Joseph Bell: *See*—
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Tobey, Hubert E.; Hood, John W.; and Irvin, Dee L., to International Telephone and Telegraph Corporation. Channeling conveyor. 3,771,640, Cl. 198-31.0aa.

Tobias, Jaromir: *See*—
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Tochon, Jean Paul, to Saint-Gobain Industries. Vitroceramics. 3,772,041, Cl. 106-39.600.

Toho Kagaku Kogyo Kabushiki Kaisha: *See*—
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Tolliver, James W., to Du Pont de Nemours, E. I., and Company. Polyester pillow batt. 3,772,137, Cl. 161-169.000.

Tone Boring Company Limited: *See*—
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Toyo Bearing Manufacturing Company Limited: *See*—
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
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Tracy, Alfred C., to McDonnell Douglas Corporation. Stabilized rotary blades. 3,771,922, Cl. 416-196.000.

Tranquilla, Michael N.; and Kraatz, Gerald A., to Union Special Corporation. Sewing machine cooling system. 3,771,478, Cl. 112-218.00r.

Transcinor Incorporated: *See*—
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Tribes, Rene, to CSF-Compagnie Generale de Telegraphie Sans Fil. Method of manufacturing a field effect transistor. 3,772,098, Cl. 148-189.000.

Triplett, Benny L., to Burlington Industries, Inc. Flocked spunlaced blanket. 3,772,131, Cl. 161-64.000.

Triplett, Gerald H.; and Dowds, Thomas A., to Burroughs Corporation. Molded pallet. 3,772,573, Cl. 317-101.00r.
Troster, Helmut: *See—*
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Tubuko, Kazuo; Kurotori, Tuneo; and Tashiro, Isao, to Ricoh Co., Ltd. Merocyanine dyes for sensitizing zinc oxide photoconductors. 3,772,281, Cl. 260-240.100.
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Tuzi, Takater; Awane, Katunobu; and Matunami, Mutuo, to Sharp Kabushiki Kaisha. Method for manufacturing semiconductor device. 3,771,219, Cl. 29-583.000.
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Ulrich, Paul; Staeuble, Max; Kugler, Fritz; and Jost, Max, to Ciba-Geigy AG. Vat dyestuffs: aryloxypyrimidinylanthraquinone. 3,772,296, Cl. 260-256.40c.
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National Aeronautics and Space Administration; Administrator; with respect to an invention of:
Holmes, Roy F. Catalyst cartridge for carbon dioxide reduction unit. 3,771,959, Cl. 23-288.00j.
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Usowski, Anton Burr, to Globe-Union Inc. Encapsulated electrical device. 3,772,452, Cl. 174-52.0pe.

Uzelmeier, Christopher W.; and Schroeder, Carl W., to Shell Oil Company. Alkali metal salts of aralkanoic or aralkenoic acids to improve dyeability of polyolefin compositions. 3,772,411, Cl. 260-897.00b.

Vail, Sidney L., to United States of America, Agriculture. Catalyst assist agents using leaving group effects. 3,771,957, Cl. 8-186.000.

Vaillant, Joh., KG: *See—*
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Valente, Angelo M.; and Wolff, Robert W., to GTE Automatic Electric Laboratories Incorporated. Self-testing selection arrangement for a communication switching system. 3,772,480, Cl. 179-175.230.

Vallender, Edward: *See—*
De Nocola, Frank; and Vallender, Edward, 3,771,708.

van Amerongen, Edward, to Respiratory Care, Inc. Nedulizer. 3,771,721, Cl. 239-338.000.

Van Bost, Jacques: *See—*
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Van Daal, Hans. Apparatus for the manufacture of bricks. 3,771,932, Cl. 425-296.000.

Van Der Lely, Ary: *See—*
Van Der Lely, Cornelis; Van Der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 3,771,303.

Van Der Lely, Cornelis; Van Der Lely, Ary; and Bom, Cornelis Johannes Gerardus. Device for working crop lying on the ground. 3,771,303, Cl. 56-400.000.

Van Gerwen, Petrus Josephus, to U.S. Philips Corporation, mesne. Transmission system for the transmission of pulses. 3,772,598, Cl. 325-50.000.

Van Rijs, Pieter Adam: *See—*
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Van, Sherman T.: *See—*
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Van Smith, William, to Lectrolarm Custom Systems, Inc. Freight security system. 3,772,668, Cl. 340-224.000.

Vandervell Products, Limited: *See—*
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Vaponics Incorporated: *See—*
Smith, Verity C., 3,771,660.

Varian Associates: *See—*
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Varker, Charles J., to United States of America, Air Force, mesne. Method for the investigation of thin films on a semiconductor substrate in a scanning electron microscope. 3,772,520, Cl. 250-307.000.

Vascotto, Mario; Schanck, Donald E.; and Lyon, Floyd A., to Halm Instrument Co., Inc. Banding means. 3,771,435, Cl. 100-4.000.

Vasin, Eduard Lvgenievich: *See—*
Bezrukov, Alexandr Fredorovich; Balykov, Petr Semenovich; Mashkovsky, Arkady Vsevolodovich; and Vasin, Eduard Lvgenievich, 3,771,633.

Vaughan, Desmond H., to General Dynamics Corporation. Expandable retractable structure. 3,771,274, Cl. 52-646.000.

Vaughn, Donald E. Laundry apparatus. 3,771,238, Cl. 34-86.000.

Vector General, Inc.: *See—*
Hasenbalg, Ralph D., 3,772,563.

Vedejs, Arthur Guntis: *See—*
Frey, Dean Rudisill; Henn, Robert Walter; Smith, Donald Tolman; and Vedejs, Arthur Guntis, 3,772,635.

Velazquez, Tony. Spinal brace. 3,771,513, Cl. 128-78.000.

Vernay Laboratories, Inc.: *See—*
Gifford, Robert T., 3,771,556.

Vest, Glenn E., to General Electric Company. Louver air cleaner. 3,771,293, Cl. 55-319.000.

Vibro-Meter, AG: *See—*
Hatschek, Rudolf A., 3,772,545.

Victor Company of Japan Ltd.: *See—*
Ghwaki, Isao, 3,772,467.
Tatsuguchi, Kazoo, 3,772,468.

Villarroel, Fernando, to United States of America, Army. Analog flueric gas concentration sensor. 3,771,348, Cl. 73-23.000.

Villeret, Michel: *See—*
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Vinyl Plastics, Inc.: *See—*
Nirenski, Boguslaw K.; and Grover, R. Bruce, 3,771,891.

Visconti, Gerald; and Muller, Theo, to Roamer Watch Co. S.A. Daydate timepiece advancing and correcting device. 3,771,308, Cl. 58-58.000.

Vlahos, Petro Tarzana; and Holm, Wilton R., to Association of Motion Picture and Television Producers Inc., The. Image modification of motion pictures. 3,772,465, Cl. 178-5.30d.

Vogel, Christian: *See—*
Sturm, Elmar; Cellarius, Hans-Joerg; Von Bredow, Brigitta; and Vogel, Christian, 3,772,312.

Vogel, Herward A.: *See—*
Brown, Harvey A.; Vogel, Herward A.; and Sandberg, Carl L., 3,772,248.

Vogt, Clifford M. Method for improving physical properties of spray spun fibrous sheet materials. 3,772,417, Cl. 264-230.000.

Vogt, James Lee, to Deere & Company. Gauge wheel mounting for a harvester. 3,771,302, Cl. 56-364.000.

Volkswagenwerk Aktiengesellschaft: *See—*
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Von Brachel, Hanswilli: *See—*
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Von Der Lieth, William H.: *See—*
Harmon, James F.; Johnston, Richard D.; Lach, John H.; Von Der Lieth, William H.; and Murphy, Thomas L., 3,771,937.

Von Gizycki, Ulrich; Oertel, Gunter; and Beck, Gunther, to Bayer Aktiengesellschaft. Pyridyl isocyanates. 3,772,313, Cl. 260-296.00c.

Von Strandtmann, Maximilian; and Connor, David T., to Warner-Lambert Company. [4-Substituted]4-(methylsulfinyl)methyl carbostyrils. 3,772,301, Cl. 260-283.00s.

Von Weise Gear Co.: *See—*
Russell, Leroy E., 3,772,626.

Vossen, Karl, to Uniroyal Englebert Deutschland AG. Method for the permanent making of toothed belts. 3,772,117, Cl. 156-140.000.

VSI Corporation: *See—*
Swindt, Joseph K., II, 3,771,410.

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Waehner, Glenn C., to United Aircraft Corporation. Multi-level power amplifier. 3,772,606, Cl. 330-13.000.

Wager, Dieter: *See—*
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Waggoner, John B.: *See—*
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Wakae, Osamu; Yahushiji, Kunito; and Okada, Yashiyuki, to Takeda Chemical Industries, Inc. N,N'-methylene-bis(2-amino-1,3,4-thiadiazole). 3,772,316, Cl. 260-306.80d.

Wakai, Shuzo; and Sugano, Hitoshi, to Matsushita Electronics Corporation. Chrominance amplifier with provisions for gain control and color killer action. 3,772,463, Cl. 178-5.40r.

Wakefield, Gene Felix, to Texas Instruments, Incorporated. Metal carbonitride-coated article and method of producing same. 3,771,976, Cl. 29-194.000.

Wald, Fritz V.: *See—*
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Wallac OY: *See—*
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Wallace, David J.: *See—*
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Wallace, Harry L., to Burroughs Corporation. Multiple tape printing apparatus and housing facility therefor. 3,771,441, Cl. 101-2.000.

Walser, Armin: *See—*
Hellerbach, Joseph; Walser, Armin; Bretschneider, Hermann; and Rudolph, Werner, 3,772,271.
Hellerbach, Joseph; Szente, Andre; and Walser, Armin, 3,772,305.

Walter, Jean-Jacques, to Agence Nationale de Valorisation de la Recherche Anvar. Continuous production machine for the manufacture of a composite tubular element. 3,772,118, Cl. 156-172.000.

Walther, Milton F., to Lufkin Industries, Inc. Apparatus for servicing and operating a reciprocal well pump or the like. 3,771,609, Cl. 173-29.000.

Wankel GmbH: *See—*
Ruf, Max, 3,771,904.

Wanner, John C.: *See—*
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Wano, Haruhiko: *See—*
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Ward, John Joseph Bernard: *See—*
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Ware Machine Works, Inc.: *See—*
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Waring, Dana B., to United Aircraft Corporation. Apparatus for continuous casting of directionally solidified articles. 3,771,586, Cl. 164-279.000.

Warner & Swasey Company, The: *See—*
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Warner, Gene: *See—*
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Wassell, Donald Benjamin, to Deere & Company. Combine stone strap. 3,771,530, Cl. 130-27.0jt.

Watanabe, Daiji, to Kabushiki Kaisha Machida Seisakusho. Air supply apparatus for establishing constant pressure in a receiving enclosure. 3,771,552, Cl. 137-487.500.

Watanabe, Teruji: *See—*
Oshima, Shintaro; Watanabe, Teruji; and Ishihara, Hideo, 3,772,661.

Watarai, Syu; and Ono, Hisatake, to Uniroyal, Inc. Photoconductive reaction product of N-beta-chlorethyl carbazole and formaldehyde. 3,772,382, Cl. 96-1.500.

Watson, Patrick: *See—*
Barthalon, Maurice; Moiroux, Auguste; and Watson, Patrick, 3,771,462.

Waysilk, Enid A.: *See—*
Waysilk, John J.; and Waysilk, Enid A., 3,771,522.

Waysilk, John J.; and Waysilk, Enid A. System and apparatus for lavaging the lower intestinal tract. 3,771,522, Cl. 128-227.000.

Wean United Inc.: *See—*
Williams, Arthur L.; and Ellis, Robert S., 3,771,215.

Weatherhead Company, The: *See—*
Budizich, Tadeusz, 3,771,837.

Weaver, Max A.; Wallace, David J.; and Straley, James M., to Eastman Kodak Company. Anthraquinone compounds. 3,772,362, Cl. 260-377.000.

Webb, Alan David, to British Petroleum Company Limited, The. Connector. 3,772,636, Cl. 339-117.00r.

Webb, Albert A.: *See—*
Webb, Albert A.; and Tullis, J. Paul, 3,771,550.

Webb, Albert A.; and Tullis, J. Paul, 70% to Webb, Albert A., 15% to Hanson, Fred H., 10% to Fowler, Knobbe & Martens and 5% to Tullis, J. Paul. Ball canister and system for controlling cavitation in liquids. 3,771,550, Cl. 137-485.000.

Webb, Raymond J., Jr.: *See—*
Rhodes, William H.; and Webb, Raymond J., Jr., 3,772,048.

Webb, Robert M.; and Parry, Keith S., to Creears, T. H., Corporation. Method and control circuit for liquid level control systems. 3,772,531, Cl. 307-252.00n.

Webb, Thomas O., to Marathon Oil Company. Use of micellar solution as an emulsion breaker. 3,771,602, Cl. 166-305.00r.

Weber-Knapp Company: *See—*
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Weichert, Arnold: *See—*
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Bircher, Johannes; Weidenhagen, Rudolf; Mainz, Uber; Reinicke, Hans; Leonhauser, Senta; and Bauer, Ingeborg, 3,772,433.

Weinhold, Karl. Apparatus for the attachment of a hose or a couple to a pipe end. 3,771,818, Cl. 285-242.000.

Weis, Dieter: *See—*
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Weisbach, Jerry A.: *See—*
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Weisgerber, Thomas W.: *See—*
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Weiss, Armin K., to Eastman Kodak Company. Electrophotographic apparatus and method for imagewise charge generation and transfer. 3,772,010, Cl. 96-1.00r.

Weiveris, William V.: *See—*
Benson, Ernest J.; Tull, Alonzo E.; and Weiveris, William V., 3,772,040.

Wells, John B., to Xerox Corporation. Photoelectrophoretic imaging process employing electrically photosensitive particles and inert particles. 3,772,013, Cl. 96-1.300.

Wells, Rodney Lee, to Allied Chemical Corporation. Process for producing an improved antistatic polyamide fiber. 3,772,403, Cl. 260-857.0pg.

Wendel, Gerald Raymond, to Mobil Oil Corporation. Package for dispensing thermoplastic bags and method for manufacture thereof. 3,771,645, Cl. 206-57.00a.

Wendland, Broder: *See—*
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Werderman, William R.: *See—*
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Wessendorf, Richard; and Bellinger, Horst, to Henkel & Cie G.m.b.H. 5-Bromo-5-nitro-1,3-dioxane, process and antimicrobial compositions. 3,772,443, Cl. 424-278.000.

Westenkirchner, Frank A.; and Rempes, Paul E., Jr., to Champion Spark Plug Company. Spark plug. 3,771,204, Cl. 29-25.120.

Western Electric Company, Incorporated: *See—*
Harendza-Harinxma, Alfred Joseph, 3,772,496.
Lesyk, Joseph N.; Ludwig, David P.; and Monahan, Jack J., 3,771,711.
Louzon, Theodore John, 3,772,079.

Westinghouse Electric Corporation: *See—*
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Bratton, Raymond J.; Roberts, Elwyn; and Smerd, Peter G., 3,772,147.
Johnston, Paul M.; MacKenzie, Raymond W.; and Heinrich, Theodore M., 3,772,669.
Mendelsohn, Morris A.; and Ruffining, Charles R., 3,772,064.
Ryan, Frederick M.; and Miller, Robert C., 3,772,099.

Weston Instruments, Inc.: *See—*
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Wheatley, Marion E.: *See—*
Zeitner, Edward J., Jr.; Wheatley, Marion E.; Witherspoon, Romeo R.; and Meibuhr, Stuart G., 3,772,086.

Wheeler, Harry L., Jr. Separater apparatus for handling compressed air. 3,771,295, Cl. 55-424.000.

Wheelwright, Robert W., to Wurlitzer Company, The. Musical instrument with digital data handling system and lighting display. 3,771,406, Cl. 84-464.000.

Whirlpool Corporation: *See—*
Nichols, Duane C.; and Linstromberg, William J., 3,771,319.

White, Wilmer: *See—*
Ciccone, Thomas O.; and White, Wilmer, 3,771,453.

White, Wilmer; and Ciccone, Thomas O., to United States of America, Army. Primer. 3,771,454, Cl. 102-45.000.

Whitley, William P., Jr. Method for hot dip galvanizing torsion bar suspension systems for trailer wheels. 3,772,057, Cl. 117-48.000.

Whitmore, Dennis William: *See—*
Farmer, Ernest Leonard; and Whitmore, Dennis William, 3,771,326.

Whittaker Corporation: *See—*
Brison, Robert L., 3,771,686.

Whittaker, Gary L., to Xerox Corporation. Reversal development using polar liquid developers. 3,772,012, Cl. 96-1.01y.

Whitwell, James H.: *See—*
Parry, Sidney J. S.; and Whitwell, James H., 3,771,887.

Whitwell, James H., to Great Lakes Carbon Corporation. Nipple-electrode assembly and joint. 3,771,886, Cl. 403-296.000.

Whitwell, James H.; Parry, Sidney J. S.; and Gazda, Irving W., to Great Lakes Carbon Corporation. Nipple-electrode assembly and joint. 3,771,889, Cl. 403-296.000.

Whyzmuzis, Paul John: *See—*
Savageau, Robert George; and Whyzmuzis, Paul John, 3,772,171.

Wible, Paul E., to Rucker Company, The. Ground fault protective system. 3,772,569, Cl. 317-18.00d.

Wickberg, Borje Vilhelm: *See—*
Edstrand, Torsten Karl Ivar Bernhard; Munksgaard, Asger; Ronlan, Alvin; and Wickberg, Borje Vilhelm, 3,772,376.

Wicke, Charles H., to ACF Industries, Incorporated. Safety device for gate valve actuator. 3,771,540, Cl. 137-75.000.

Wiggins, Don A., to Textron, Inc. Hydraulic flow difference sensor and shutoff apparatus. 3,771,543, Cl. 137-100.000.

Wilbur, James Justin; and Kamholtz, Richard, to Harsco Corporation. Shore bracket. 3,771,753, Cl. 248-295.000.

Wilbur, Robert Daniel, to American Cyanamid Company. Method of using steroid acetonides as growth promoting agents. 3,772,435, Cl. 424-241.000.

Wildt Mellor Bromley Limited: *See—*
Farmer, Ernest Leonard; and Whitmore, Dennis William, 3,771,326.

Wilenichik, Jerzy J. Slide selector switch with segmented terminals and collector means. 3,772,486, Cl. 200-16.00c.

Wilhelm, Frederick C.: *See—*
Mitsche, Roy T.; and Wilhelm, Frederick C., 3,772,213.

Wilhelm, Friedrich; Karrer, Johann; and Pedretti, Alberto, to Karner System AG. Method for liquid treatment of textile material. 3,771,954, Cl. 8-149.100.

Wilk, Stanley H.; and Lord, Bernard W., to General Electric Company. Shock-absorbing spring clamp for electric induction apparatus. 3,772,627, Cl. 336-197.000.

Wilke, Richard. Ball-threaded spindle nut with at least one individual overflow insert member. 3,771,382, Cl. 74-459.000.

Wilkinson, Ernest James, to Communications Satellite Corporation. Satellite antenna autotrack system permitting error signals to appear at the earth station. 3,772,701, Cl. 343-100.0cs.

Willett, Colin S.; and Kruger, John G., to United States of America, Army. Laser cavity configuration yielding dual output beam. 3,772,609, Cl. 331-94.500.

Williams, Andrew Sinclair. Fluid combining apparatus. 3,771,542, Cl. 137-93.000.

Williams, Arthur L.; and Ellis, Robert S., to Wean United Inc. Flash welding method. 3,771,215, Cl. 29-482.000.

Williams, Chester I. Wedge-held U-bolt clamp. 3,771,884, Cl. 403-188.000.

Williams, Laurence Lyman; and Coscia, Anthony Thomas, to American Cyanamid Company. 2-Vinyl-1-cycloamidinepropionamide polymers. 3,772,259, Cl. 260-88.70r.

Williams, Laurence Lyman; and Coscia, Anthony Thomas, to American Cyanamid Company. Glyoxal substituted vinyl alcohol-acrylamide graft polymers. 3,772,407, Cl. 260-875.000.

Williams, Lloyd Stuart: *See—*
Stringer, Robert Kenneth; McKinnon, Neil Alexander; and Williams, Lloyd Stuart, 3,772,042.

Williams, Thomas Henry: *See—*
Uskokovic, Milan Radoje; and Williams, Thomas Henry, 3,772,366.

Williams, William George, to EMI Limited. Improvements relating to electroluminescent light sources. 3,772,556, Cl. 313-108.00a.

Wilson, Donald R.; and Flonc, Nicholas P., to Eagle-Picher Industries, Incorporated. Valve stem seal. 3,771,800, Cl. 277-187.000.

Wilson, Fred A.: *See—*
McMath, Jack A.; and Wilson, Fred A., 3,771,566.

Wilson, George A., to I-T-E Imperial Corporation. Racking safety disconnect switch for vacuum circuit breakers. 3,772,489, Cl. 200-50.0aa.

Wilson, Henry Lewis: *See—*
Nicodemus, Paul Otis; and Wilson, Henry Lewis, 3,772,455.

Wilson, Homer M., to Petrolite Corporation. Electrode for corrosion test. 3,772,178, Cl. 204-195.00c.

Wilzig, Emil Karl: *See—*
Witzig, Emil Karl; Frank, Rudolf; and Klein, Willi, 3,771,896.

Winans, Charles F.; and Cardina, James A., to Goodyear Tire & Rubber Company, The. Process of preparing aromatic sulfonic acid salts of hexamethylenetetramine. 3,772,285, Cl. 260-248.500.

Winfree, Virginia R. Combination bicycle seat. 3,771,827, Cl. 297-192.000.

Winkler, Ted: *See—*
Grannis, Norman J.; and Winkler, Ted, 3,772,536.

Winter, Augustus P. Linear positive displacement pump with rotary to reciprocating drive. 3,771,918, Cl. 417-266.000.

Winterhalter, David R.; and Smith, Vigo N., to Shell Oil Company. Method and apparatus for measuring total organics in aqueous solutions. 3,771,962, Cl. 23-253.0pc.

Wirth, Manfred N.: *See—*
Wirth, Richard E.; and Wirth, Manfred N., 3,771,312.

Wirth, Richard E.; and Wirth, Manfred N. Automotive turbine engine. 3,771,312, Cl. 60-39.170.

Wisconsin Alumni Research Foundation: *See—*
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Wise, Mary: *See—*
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Wiseman, Donald F.: *See—*
Isenberg, Henry D.; Reichler, Allen S.; and Wiseman, Donald F., 3,772,154.

Wisman, Gerrit Marinus; and Van Rijs, Pieter Adam, to Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handel en Verkeer. Device for degassing a liquid. 3,771,288, Cl. 55-204.000.

Wisotzky, Otto G., to GTE Automatic Electric Laboratories Incorporated. Dial pulse correcting circuit. 3,772,474, Cl. 179-16.0ea.

Witherspoon, Romeo R.: *See—*
Zeitner, Edward J., Jr.; Wheatley, Marion E.; Witherspoon, Romeo R.; and Meibuhr, Stuart G., 3,772,086.

Witman, Jack H., to Armstrong Cork Company. Chemically embossed surface coverings using barrier film. 3,772,138, Cl. 161-161.000.

Witt, Chester J.: *See—*
Skoli, Sigmund P.; Mojonnier, Harry G.; Witt, Chester J.; Seyfarth, Walter A.; and Ross, Victor H., 3,771,289.

Witte, Fritz, to Haun-Werke Korber & Co., KG. Apparatus or transporting discrete commodities to high-speed consuming machines or the like. 3,771,281, Cl. 53-64.000.

Witzig, Emil Karl; Frank, Rudolf; and Klein, Willi, to Klein, Willi, Wilzig, Emil Karl and said Klein, Willi, assor. to said Frank, Rudolf. Radial boring machine with extending, adjustable boring head. 3,771,896, Cl. 408-237.000.

Wojcik, Witold M., to Roblin Industries, Inc. Method for continuously casting steel billet strands to minimize the porosity and chemical segregation along the center line of the strand. 3,771,584, Cl. 164-89.000.

Wolff, Robert W.: *See—*
Valente, Angelo M.; and Wolff, Robert W., 3,772,480.

Wood, Sidney B., Jr., to Tennis Services, Inc. Playing court surface and method of constructing same. 3,771,787, Cl. 273-29.00r.

Woodgate, Paul E., to Eastman Kodak Company. Preparation of dialkali dihydroxybenzene disulfonates. 3,772,379, Cl. 260-512.00r.

Woodring, William H., to Olin Corporation. Low pressure ballistic system. 3,771,451, Cl. 102-38.000.

Woods, Jack L., to Perma-Technological Industries, Inc., mesne. Electrolytic process for slating a curvilinear aluminum workpiece. 3,772,166, Cl. 204-33.000.

Woods, Robert L., to United States of America, Army. Fluidic fuel injection device having air modulation. 3,771,504, Cl. 123-119.00r.

Woodson, Herbert Horace, to Massachusetts Institute of Technology. Eddy-current shield superconducting machine. 3,772,543, Cl. 310-52.000.

Woodward, Robert B.: *See—*
Conover, Lloyd H.; and Woodward, Robert B., 3,772,363.

Workings, John Louis, to Information Appliances Corporation. Multiposition thumbwheel switch assembly cylindrically arranged fixed contact rods. 3,772,485, Cl. 200-11.0tw.

Workman, Clayton E., to General Mills, Inc. Fibrous products from thermoplastic polyamide polymers. 3,772,136, Cl. 161-169.000.

Worthington, Mark N. Direct reading comfort index thermometer. 3,771,364, Cl. 73-336.000.

Wortman, Donald L. Artificial heart utilizing blood pulsing fluid oscillators. 3,771,174, Cl. 3-1.000.

Wowk, Anatole, to M & T Chemicals, Inc. Bis(organotin)stabilizers for vinyl chloride polymers. 3,772,244, Cl. 260-45.75k.

Wright, Charles G.: *See—*
Wroblewski, Richard C.; and Wright, Charles G., 3,772,548.

Wright, David Frank; and Rubenstein, Robert Aron, to RCA Corporation. Braking arrangement which includes hydraulic pump. 3,771,919, Cl. 417-236.000.

Wright, George W., to Crown Cork & Seal Company, Inc. Apparatus for stripping container bodies from metal working punches. 3,771,344, Cl. 72-345.000.

Wright, John B., to Upjohn Company, The. 4H-(1) Benzothieno(3,2-beta)pyran-4-one-2-carboxylic acids and related compounds. 3,772,336, Cl. 260-330.500.

Wright, Juanell L.: *See—*
Wright, Richard O., 3,771,408.

Wright, Richard O., to Wright, Juanell L. Guitar body. 3,771,408, Cl. 84-291.000.

Wrobel, Gunter, to Papst-Motoren, KG, Firma. Traction relief arrangement for cords of small size electromotors. 3,772,544, Cl. 310-71.000.

Wroblewski, Richard C.; and Wright, Charles G., to Rockwell International Corporation. Wheel speed sensor. 3,772,548, Cl. 310-168.000.

Wuchter, Gerhard: *See—*
Forster, Hans-Joachim M.; Katz, Klaus; Bulow, Manfred; Scheuter, Anton; Bordovsky, Jaromir; and Wuchter, Gerhard, 3,771,383.

Wurlitzer Company, The: *See—*
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Xaus, Sergio. Synchronized reading devices for looms. 3,771,571, Cl. 139-68.000.

Xerox Corporation: *See—*
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Ring, Howard D., 3,771,184.
Wells, John B., 3,772,013.
Whittaker, Gary L., 3,772,012.

Yabuta, Keiichiro, to Nissan Motor Company Limited. Vehicular hydraulic brake system. 3,771,835, Cl. 303-6.00c.

Yahushiji, Kunito: *See—*
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Yamada, Hiroshi, to Kabushiki Kaisha Ricoh. Film feed mechanism for moving the film in normal and reverse directions. 3,771,745, Cl. 242-204.000.

Yamada, Hisafumi: *See—*
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Yamada, Tominori; and Douno, Syugo, to Mitsui Shipbuilding and Engineering Co. Ltd. and Glory Kogyo Kabushiki Kaisha. Gripping mechanism for manipulator. 3,771,825, Cl. 294-88.000.

Yamagishi, Hidehisa; and Gunji, Naoki, to Nippon Kokan Kabushiki Kaisha. Method of treating surfaces of steel products. 3,772,165, Cl. 204-28.000.

Yamaguchi, Mitsuo; and Kageyama, Yoichi, to Mitsubishi Chemical Industries, Ltd. Process for increasing selectivity of tetramethylene glycol. 3,772,395, Cl. 265-635.00d.

Yamano, Yuzo, to Sony Corporation. Torque measuring apparatus. 3,771,358, Cl. 73-134.000.

Yamate, Takeshi: *See—*
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Yamato, Noboru: *See—*
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Yatabe, Fiji, to Atomic Energy of Canada Limited. Moisture leak detector. 3,771,349, Cl. 73-29.000.

Yerman, Alexander J.: *See—*
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Yoshida, Henry: *See—*
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Yoshida, Tetsuo: *See—*
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Yoshida, Yasuo; Kawai, Katsuhiro; and Namiki, Hiroshi, to Iwasaki Denki Kabushiki Kaisha. Electric discharge lamps. 3,772,557, Cl. 313-229.000.

Yoshikawa, Nobuharu: *See—*
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Yoshioka, Yoshitomo. Apparatus and method for spraying or sprinkling granular material. 3,771,696, Cl. 222-199.000.

Young, Donald G., to Dow Corning Corporation. Primer for adhesion of silicone rubber to metal. 3,772,122, Cl. 156-329.000.

Young, Robert H.: *See—*
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Yumiki, Keiichi: *See—*
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Z-Loda Corporation: *See—*
Schatte, Kurt, 3,771,642.

Zagar, Frank C.; and Jerome, Ernest F., to Zagar, Inc. Multiple spindle drive device. 3,771,373, Cl. 74-63.000.

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Zaitsev, Anatoly Danilovich: *See—*
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Zaleski, Anne Margaret. Combination toy dog and vacuum cleaner. 3,771,192, Cl. 15-330.000.

Zanca, Joseph. Disposable douche. 3,771,523, Cl. 128-232.000.

Zapater, Francisco Solana; Zapater, Pedro Solana; and Zapater, Jose Solana. Toilet mirror. 3,772,508, Cl. 240-4.200.

Zapater, Jose Solana: *See—*
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Zapater, Pedro Solana: *See—*
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Zeitner, Edward J., Jr.; Wheatley, Marion E.; Witherspoon, Romeo R.; and Meibuhr, Stuart G., to General Motors Corporation. Method of making anodes for hydrazine fuel cells. 3,772,086, Cl. 136-120.0fc.

Zellerhoff, Knut; Schutz, Siegismund; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. N¹-Sulfonyl-2-phenylhydrazino-2-imidazolines. 3,772,320, Cl. 260-309.600.

Zellweger AG: *See—*
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Zickendraht, Christian; Buehler, Arthur; and Schuetz, Hans Ulrich, to Ciba-Geigy AG. Anthraquinone compounds. 3,772,321, Cl. 260-309.200.

Ziobrowski, Bernard G., to Hercules Incorporated. Preparation of red shade molybdate orange pigments. 3,772,047, Cl. 106-297.000.

Ziv, Martin H.: *See—*
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TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF NOVEMBER, 1973

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Data Card Corporation: *See*—
Drillick, Jacob H. Re. 27,809.
Drillick, Jacob H., to Data Card Corp. High speed automatic card embosser. Re. 27,809, 11–13–73, Cl. 101—18.
Michelson, Yigal. Power ladder. Re. 27,808, 11–13–73, Cl. 182—14.
Soyez Freres: *See*—
Soyez, Roger. Re. 27,807.
Soyez, Roger, to Soyez Freres. Machine for producing toothpicks. Re. 27,807, 11–13–73, Cl. 83—119.

LIST OF PLANT PATENTEES

Culbert, John R., to University of Illinois Foundation. Chrysanthemum plant. 3,408, 11–13–73, Cl. 81.
Duffett, William E.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,409.
Jessel, Walter H., Jr., and Duffett. 3,405.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,409, 11–13–73, Cl. 79.
McDaniel, Gayle K., to Carlton Rose Nurseries. 3,407, 11–13–73. Cl. 20.
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Ajax Hardware Mfg. Corp.: *See*—
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Adamson, Gerald J., J. W. Kuypers, and I. F. Norton, to Don Mills Development Ltd. Newspaper vending stand. 229,221, 11–13–73. Cl. D52—2.
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Mollerstedt, Allan. 229,180.
Alpern, Melvin. Pouring cap for bottle or like container. 229,173, 11–13–73, Cl. D9—279.
Andrus, Edward R., Jr., D. E. Fahnstrom, and J. G. Hansen, to Elder Wilbert Corp. Casket. 229,176, 11–13–73. Cl. D19—1.
Baldwin, D. H., Co.: *See*—
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Barket, Dennis J., to D. H., Baldwin Co. Organ console. 229,229, 11–13–73, Cl. D56—2.
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Bendix Corp., The: *See*—
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Bergstrom, Thomas G. Liquid dispenser. 229,248, 11–13–73, Cl. D94—8.
Bernhard, Heinrich W. Tethered bag for an exercising game or the like. 229,202, 11–3–73, Cl. D34—5.
Besnard, Francis, to Societe des Accumulateurs Fixes et de Traction. Flash light. 229,219, 11–13–73. Cl. D48—24.
Bledsoe, Ward. Ceiling air deflector frame. 229,181, 11–13–73, Cl. D23—112.
Bledsoe, Ward. Ceiling air deflector frame. 229,182, 11–13–73, Cl. D23—112.
Bledsoe, Ward. Wall air deflector frame. 229,185, 11–13–73, Cl. D23—112.
Bobrowski, Louis G., to The Stanley Works. Door chain lock. 229,163, 11–13–73, Cl. D8—131.
Brizzolara, Joseph J., and W. S. Feller. Baby cradle. 229,131, 11–13–73, Cl. D6—14.
Brown, George Zindel, and R. H. Ramsey, to Keithley Instruments, Inc. Elongated hand held test probe. 229,184, 11–13–73. Cl. D26—1.
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Buckbee-Mears Co.: *See*—
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Costa, Allan A. Casing for an eyeliner brush and an eyelash brush. 229,239, 11–13–73, Cl. D86—10.
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Curtis, Richard D., B. C. Baugh, and R. R. Deines, to The Coleman Co., Inc. Combined gas lantern and fuel bottle therefor. 229,218, 11–13–73, Cl. D48—24.
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CLASS 178

5.2D 3,772,465
5.4BT 3,772,459
3,772,462
5.4CK 3,772,461
5.4P 3,772,460
5.4R 3,772,463
6 3,772,458
6.8 3,772,457
7.3 3,772,450
7.6 3,772,464
88 3,772,456

CLASS 179

1GQ 3,772,479
1ST 3,772,478
15BS 3,772,475
16EA 3,772,474
3,772,477
18EB 3,772,476
84T 3,772,470
100L 3,772,472
100.2B 3,772,468
100.2D 3,772,471
100.2S 3,772,473
100.2T 3,772,469
100.4ST 3,772,467
116 3,772,466
175.23 3,772,480

CLASS 180

6.48 3,771,615
6.7 3,771,616
24.02 3,771,617
42 3,771,618
79 3,771,619

CLASS 181

.5NP 3,771,620
31B 3,771,621

CLASS 182

14 Re.27,808

CLASS 184

6.24 3,771,624
11A 3,771,622
15A 3,771,623

CLASS 188

71.8 3,771,625
170 3,771,627
189 3,771,628
298 3,771,626
322 3,771,629

CLASS 191

6 3,772,481
23 3,772,482

CLASS 192

3TR 3,771,630
44 3,771,632
58R 3,771,631

CLASS 193

35A 3,771,633

CLASS 194

97R 3,771,637

CLASS 195

1.5 3,772,149
51R 3,772,150
3,772,151
66R 3,772,152
103.5R 3,772,154
127 3,772,153

CLASS 196

98 3,771,638

CLASS 197

1R 3,771,634
52 3,771,635
82 3,771,636

CLASS 198

25 3,771,639
31AA 3,771,640
34 3,771,641
154 3,771,642
213 3,771,643
220CA 3,771,644

CLASS 200

1R 3,772,483
4 3,772,484
11TW 3,772,485
16C 3,772,486
38R 3,772,488
50AA 3,772,489
61.13 3,772,487
153H 3,772,490

CLASS 202

263 3,772,155

CLASS 203

33 3,772,156
52 3,772,157
53 3,772,158

CLASS 204

2 3,772,159
11 3,772,160
15 3,772,161
3,772,162
26 3,772,163
3,772,164
28 3,772,165
33 3,772,166
43S 3,772,168
43T 3,772,167
51 3,772,170
157.1H 3,772,172
159.19 3,772,171
165 3,772,173
192 3,772,174
195B 3,772,176
195C 3,772,178
195M 3,772,175
195S 3,772,177
197 3,772,179
277 3,772,201
305 3,772,180

CLASS 206

57A 3,771,645
65K 3,771,646

CLASS 208

48AA 3,772,182
65 3,772,183
3,772,184
251H 3,772,185
326 3,772,186

CLASS 209

73 3,771,647
74R 3,771,648
3,771,649
80 3,771,650
107 3,771,651
122 3,771,652

CLASS 210

7 3,772,187
15 3,772,188
40 3,771,653
3,772,189
44 3,772,190
3,772,191
3,772,192
62 3,772,193
3,772,194
63 3,772,181
84 3,771,654
108 3,771,655
168 3,771,656
186 3,771,658
198C 3,771,659
218 3,771,657
232 3,771,660
240 3,771,661
242 3,771,662
321 3,771,663
448 3,771,664

CLASS 211

107 3,771,665

CLASS 212

21 3,771,666
39R 3,771,667
55 3,771,668

CLASS 214

1BB 3,771,669
6BA 3,771,670
6C 3,771,671
77P 3,771,672
82 3,771,673
83.26 3,771,676
83.3 3,771,674
3,771,675
133 3,771,677
147G 3,771,678
152 3,771,679
3,771,680

CLASS 215

9 3,771,681
3,771,682
3,771,685
39 3,771,683
46A 3,771,684

CLASS 219

10.55 3,772,491
10.61 3,772,492
68 3,772,495
69G 3,772,493
3,772,494
121LM 3,772,496
216 3,772,497
336 3,772,498
490 3,772,499
535 3,772,500

CLASS 220

4R 3,771,686
44R 3,771,688
69 3,771,689
85VR 3,771,690
315 3,771,687

CLASS 221

11 3,771,691
124 3,771,692
171 3,771,693

CLASS 222

16 3,771,697
70 3,771,694
142.4 3,771,695
199 3,771,696
413 3,771,698

CLASS 223

113 3,771,699

CLASS 225

39 3,771,700

CLASS 226

1 3,771,701
7 3,771,702
42 3,771,703
89 3,771,704
92 3,771,705

CLASS 227

76 3,771,707
111 3,771,708
120 3,771,709
130 3,771,710

CLASS 228

2 3,771,706
4 3,771,711

CLASS 229

2.5 3,771,712
27 3,771,713
37R 3,771,714

CLASS 233

27 3,771,715

CLASS 235

61.11 3,772,501
61.12R 3,771,717
85FC 3,771,716
150.5 3,772,502
3,772,503
151.1 3,772,504
185 3,772,505

CLASS 239

133 3,771,718
177 3,771,719
189 3,771,720
206 3,771,723
221 3,771,724
243 3,771,725
265.11 3,771,726
417.3 3,771,727
468 3,771,728
536 3,771,730
590.3 3,771,722

CLASS 240

1.4 3,772,506
2R 3,772,507
2.1 3,772,509
4.2 3,772,508
10R 3,772,511
41R 3,771,731

CLASS 241

46.11 3,771,732
65 3,771,729
186R 3,771,733
187 3,771,734
216 3,771,735

CLASS 242

7.13 3,771,736
55.3 3,771,739
58.1 3,771,737
75.2 3,771,738
84.2A 3,771,740
84.2G 3,771,741
107.4 3,771,742
129.8 3,771,743
196 3,771,744
204 3,771,745
215 3,771,746

CLASS 244

114R 3,771,747
123 3,771,748
137P 3,771,749
3,771,750

CLASS 248

74B 3,771,751
98 3,771,752
295 3,771,753
311 3,771,754

CLASS 249

135 3,771,755
212 3,771,756
219W 3,771,757

CLASS 250

201 3,772,516
209 3,772,517
211R 3,772,518
262 3,772,513
284 3,772,519
307 3,772,520
311 3,772,510
366 3,772,512
3,772,515
385R 3,772,521
503 3,772,522
551 3,772,514
561 3,772,524
565 3,772,525

CLASS 251

4 3,771,758
58 3,771,759
75 3,771,760
134 3,771,761
148 3,771,762
173 3,771,763
306 3,771,764
310 3,771,765

CLASS 252

8.05 3,772,195
32FE 3,772,196
32.7HC 3,772,198
33.2 3,772,197
56R 3,772,169
62.1 3,772,199
70 3,772,202
90 3,772,203
99 3,772,204
171 3,772,205
301.1R 3,772,200
301.4R 3,772,206
321 3,772,207
396 3,772,208
408 3,772,209
3,772,210
414 3,772,211
432 3,772,212
447 3,772,214
466PT 3,772,213
522 3,772,215

CLASS 254

150 3,771,766

CLASS 256

11 3,771,767
552 3,772,523

CLASS 259

1R 3,771,768
3,771,769
7 3,771,770

8 3,771,771
72 3,771,772
185 3,771,773
193 3,771,774

CLASS 260

2.5AK 3,772,219
2.5AM 3,772,216
2.5AY 3,772,223
2.5AZ 3,772,221
2.5BB 3,772,218
2.5BD 3,772,224
2.5BF 3,772,217
2.5A 3,772,222
2.5L 3,772,220
17A 3,772,226
17.3 3,772,225
18R 3,772,227
21 3,772,228
22R 3,772,229
25Q 3,772,274
28 3,772,231
28.5AV 3,772,232
28.5A 3,772,233
28.5B 3,772,234
29.6HN 3,772,235
29.6F 3,772,236
31.8M 3,772,237
33.4 3,772,238
37SB 3,772,239
3,772,240
40R 3,772,241
41B 3,772,249
41.5R 3,772,242
45.75K 3,772,244
45.8A 3,772,243
45.85N 3,772,245
45.95R 3,772,246
46.5H 3,772,247
47CP 3,772,250
49 3,772,248
3,772,251
75T 3,772,252
78TF 3,772,254
78L 3,772,253
82.1 3,772,256
85.5R 3,772,257
86.1E 3,772,258
88.2D 3,772,255
88.2F 3,772,260
88.7R 3,772,259
94.3 3,772,263
94.7 3,772,262
94.9DA 3,772,261
112.5 3,772,264
3,772,265
207.1 3,772,267
208 3,772,268
209.6 3,772,266
210E 3,772,270
210R 3,772,269
239A 3,772,284
239.3D 3,772,271
239.5 3,772,283
239.6 3,772,277
240E 3,772,287
240R 3,772,282
240.1 3,772,281
240.4 3,772,278
243B 3,772,280
243C 3,772,286
247.5R 3,772,275
248AS 3,772,276
3,772,279
248.5 3,772,285
250R 3,772,273
251A 3,772,230
251R 3,772,272
3,772,288
256.4C 3,772,296
256.4F 3,772,292
3,772,294
256.4N 3,772,289
256.5R 3,772,290
3,772,291
3,772,295
268BC 3,772,300
268PE 3,772,299
268PH 3,772,297
268R 3,772,298
268T 3,772,293
282 3,772,303
283S 3,772,301
284 3,772,302
287R 3,772,304
3,772,305
288R 3,772,306
293.54 3,772,312
293.76 3,772,308
294.8R 3,772,311
294.8 3,772,307
295AM 3,772,310
296B 3,772,309
296C 3,772,313
296R 3,772,315
297R 3,772,314
306.8D 3,772,316
308C 3,772,318
308R 3,772,317
309 3,772,319
309.2 3,772,321
3,772,322
3,772,323
3,772,324
309.5 3,772,326
309.6 3,772,320
311 3,772,325
313.1 3,772,328
326.12R 3,772,329
326.62 3,772,413
326.9 3,772,330
3,772,348
327TH 3,772,332
327M 3,772,331
3,772,334
328 3,772,333
330.5 3,772,336
336 3,772,335
340.5 3,772,327
340.9 3,772,337
342.2R 3,772,338
343.2P 3,772,340
343.2R 3,772,339
343.5 3,772,366
343.6 3,772,341
348R 3,772,365
349 3,772,364
351 3,772,363
377 3,772,362
397.2 3,772,361
403 3,772,360
404 3,772,358
404.5 3,772,359
410.7 3,772,357
429J 3,772,354
429R 3,772,355
448AD 3,772,352
448.2B 3,772,349
448.2E 3,772,347
448.2N 3,772,351
3,772,353
448.8R 3,772,346
3,772,350
455A 3,772,345
456P 3,772,344
465D 3,772,387
3,772,389
465.8A 3,772,388
471C 3,772,386
471R 3,772,356
472 3,772,385
473F 3,772,343
475R 3,772,342
476R 3,772,384
479R 3,772,383
481R 3,772,382
486R 3,772,381
488K 3,772,380
512R 3,772,379
515P 3,772,378
518A 3,772,376
3,772,377
533C 3,772,375
534E 3,772,374
543R 3,772,373
553A 3,772,372
562N 3,772,371
570.5P 3,772,370
583N 3,772,369
590 3,772,367
3,772,368
609F 3,772,390
3,772,391
615.5 3,772,392
623R 3,772,394
625 3,772,393
635D 3,772,395
666A 3,772,396
668A 3,772,397
671P 3,772,398
674SA 3,772,399
683.15B 3,772,401
683.2 3,772,400
830R 3,772,402
857PG 3,772,403
859R 3,772,404
860 3,772,405
869 3,772,406
875 3,772,407
876R 3,772,409
876 3,772,408
897A 3,772,410
897B 3,772,411
932 3,772,412
973 3,772,414

CLASS 264

74 3,772,421
102 3,772,420
112 3,772,419
230 3,772,417
234 3,772,415
294 3,772,418
332 3,772,416

CLASS 266

5R 3,771,775
6S 3,771,776
36P 3,771,777

CLASS 267

140 3,771,778

CLASS 269

23 3,771,779
153 3,771,780
218 3,771,781
322 3,771,782

CLASS 271

125 3,771,783

CLASS 272

63 3,771,784
84 3,771,785

CLASS 273

1E 3,771,786
29R 3,771,787
68 3,771,788
85H 3,771,789
110 3,771,790
130AB 3,771,791
134CG 3,771,792
139 3,771,793
157R 3,771,795
162F 3,771,794

CLASS 274

10S 3,771,796
23A 3,771,797

CLASS 277

9 3,771,798
65 3,771,799
188 3,771,801

CLASS 279

4 3,771,802
3,771,803
121 3,771,804

CLASS 280

11.13T 3,771,805
11.35D 3,771,806
16 3,771,807
19 3,771,808
47.13B 3,771,809
63 3,771,810
87.04A 3,771,811
124A 3,771,813
124F 3,771,812
150SB 3,771,814
166 3,771,815
433 3,771,816

CLASS 285

55 3,771,817
242 3,771,818
312 3,771,819
373 3,771,820

CLASS 290

14 3,771,821
38 3,772,526

CLASS 292

250 3,771,822
270 3,771,823

CLASS 293

84 3,771,824

CLASS 294

88 3,771,825
114 3,771,826

CLASS 297

192 3,771,827
452 3,771,828

CLASS 298

17R 3,771,829

CLASS 299

1 3,771,830
39 3,771,831

CLASS 301

9TV 3,771,832
11R 3,771,833
37P 3,771,834

CLASS 303

6C 3,771,835
3,771,836
3,771,837
7 3,771,838
21AF 3,771,841
21BE 3,771,839
21EB 3,771,840

CLASS 305

21 3,771,843
38 3,771,844

CLASS 307

66 3,772,527
88.3 3,772,528
132R 3,772,529
234 3,772,534
252J 3,772,530
252L 3,772,532
252N 3,772,531
261 3,772,533
273 3,772,535
304 3,772,536

CLASS 308

236 3,771,845
238 3,771,846

CLASS 310

6 3,772,537
9.1 3,772,538
13 3,772,539
14 3,772,540
50 3,772,542
52 3,772,543
71 3,772,544
3,772,545
154 3,772,546
168 3,772,547
3,772,548
3,772,549
3,772,550

CLASS 312

245 3,771,847
250 3,771,848
350 3,771,849

CLASS 313

2 3,772,551
65R 3,772,552
68R 3,772,553
69C 3,772,554
85S 3,772,555
108A 3,772,556
229 3,772,557
256 3,772,558
269 3,772,559
310 3,772,560
350 3,772,561

CLASS 315

10 3,772,562
23 3,772,563
27GD 3,772,566
200A 3,772,564
276 3,772,565

CLASS 317

5 3,772,567
13A 3,772,568
18D 3,772,569
62 3,772,570
99 3,772,571
101DH 3,772,572
101R 3,772,573
134 3,772,574
235E 3,772,576
235R 3,772,577
258 3,772,578

CLASS 318

203R 3,772,579
318 3,772,580
685 3,772,581

CLASS 321

15 3,772,583
47 3,772,582
60 3,772,584

CLASS 323

7 3,772,585
17 3,772,588
35 3,772,586
46 3,772,587

CLASS 324

10 3,772,589
28R 3,772,590
30R 3,772,591
32 3,772,592
62R 3,772,593
72 3,772,594
73R 3,772,595

CLASS 325

13 3,772,596
38R 3,772,597
50 3,772,598
446 3,772,599

CLASS 328

63 3,772,600
65 3,772,601
71 3,772,602
108 3,772,603
169 3,772,604

CLASS 329

117 3,772,605

CLASS 330

13 3,772,606
35 3,772,607

CLASS 331

94.5C 3,772,611
94.5 3,772,608
3,772,609
3,772,610

CLASS 332

7.51 3,772,612
12 3,772,613
16T 3,772,614

CLASS 333

1.1 3,772,615
9 3,772,616
18 3,772,617
30R 3,772,618
95R 3,772,619

CLASS 335

63 3,772,620
186 3,772,621
202 3,772,622
253 3,772,623

CLASS 336

55 3,772,624
94 3,772,625
192 3,772,626
197 3,772,627

CLASS 338

4 3,772,628
154 3,772,629
174 3,772,630
195 3,772,631

CLASS 339

17CF 3,772,632
28 3,772,633
65 3,772,634
99R 3,772,635
102R 3,772,637
117R 3,772,636
198R 3,772,638

CLASS 340

2 3,772,639
23 3,772,640
33 3,772,641
52F 3,772,642
52H 3,772,643
52R 3,772,644
65 3,772,645
3,772,646
146.1AB 3,772,647
146.1BA 3,772,649
146.3J 3,772,648
147CN 3,772,651
147MD 3,772,650
172.5 3,772,652
3,772,653
3,772,654
3,772,655
3,772,656
3,772,657
173SP 3,772,659
173R 3,772,658
3,772,660
174TF 3,772,661
174M 3,772,663
174.1A 3,772,664
174.1C 3,772,665
3,772,666
174.1G 3,772,662
217 3,772,667
224 3,772,668
3,772,669
228.2 3,772,670
229 3,772,671
242 3,772,672
244R 3,772,673
273 3,772,674
324A 3,772,676
3,772,677
347AD 3,772,679
347DA 3,772,681
347DD 3,772,678
3,772,680
3,772,682
347NT 3,772,683
347P 3,772,675
365C 3,772,685
365L 3,772,684
373R 3,772,686
404 3,772,687

CLASS 343

5SA 3,772,689
6R 3,772,692
6.5LC 3,772,688
3,772,693
6.55S 3,772,691
7ED 3,772,690
3,772,694
7A 3,772,695
7.4 3,772,696
13R 3,772,697
3,772,698
17.1R 3,772,699
17.7 3,772,700
18E 3,772,702
100CL 3,772,703
100CS 3,772,701

CLASS 347

235R 3,772,575

CLASS 350

6 3,771,850
97 3,771,851
150 3,771,852
160LC 3,771,855
161 3,771,856
166 3,771,857
184 3,771,853
304 3,771,854

CLASS 351

159 3,771,858

CLASS 352

8 3,771,859
12 3,771,860
78R 3,771,864
130 3,771,861
3,771,862

CLASS 353

27 3,771,863
109 3,771,865

CLASS 355

3 3,771,866
14 3,771,867
77 3,771,868
85 3,771,869
91 3,771,870
102 3,771,871
125 3,771,872

CLASS 356

4 3,771,873
43 3,771,874
106 3,771,875
138 3,771,876
186 3,771,877
197 3,771,878
201 3,771,879
209 3,771,880

CLASS 377

187 3,771,800

CLASS 401

75 3,771,881
80 3,771,882
123 3,771,883

CLASS 402

21 3,771,890

CLASS 403

188 3,771,884
296 3,771,886
3,771,887
3,771,889
343 3,771,888
379 3,771,885

CLASS 404

40 3,771,891
101 3,771,893

CLASS 408

54 3,771,894
174 3,771,895
237 3,771,896

CLASS 415

53 3,771,898
72 3,771,897
3,771,900
90 3,771,899
131 3,771,927
176 3,771,926
181 3,771,925

CLASS 416

121 3,771,924
143 3,771,923
196 3,771,922

CLASS 417

12 3,771,921
179 3,771,913
211 3,771,920
236 3,771,919
266 3,771,918
289 3,771,917
319 3,771,916
360 3,771,914
3,771,915
397 3,771,912
413 3,771,911
420 3,771,910
424 3,771,909
446 3,771,908
454 3,771,907

CLASS 418

48 3,771,906
61 3,771,904
3,771,905
84 3,771,903
91 3,771,902
156 3,771,901

CLASS 423

56 3,772,422
144 3,772,423
3,772,424
239 3,772,425
286 3,772,426
290 3,772,428
337 3,772,427
412 3,772,036
447 3,772,429

CLASS 424

1 3,772,436
44 3,772,430
3,772,431
95 3,772,432

180	3,772,433	274	3,772,442	7	3,771,929	174HR	3,771,938	341	3,772,447		3,771,943
181	3,772,438	278	3,772,443	72	3,771,931	296	3,771,932	420	3,772,040	284	3,771,944
185	3,772,434	311	3,772,444	78	3,771,930	385	3,771,939	453	3,772,037	328	3,771,945
241	3,772,435	340	3,772,445	113	3,771,933						
244	3,772,437	365	3,772,446	135	3,771,934		CLASS 426		CLASS 431		CLASS 432
249	3,772,439			146	3,771,935	65	3,772,039	4	3,771,940	14	3,771,946
273	3,772,440		CLASS 425	153	3,771,936	274	3,772,035	93	3,771,941	95	3,771,947
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Frederick B. Dent, *Secretary*